Service Manual

Vector HD Scorer

October 2013 / 57-900451-000

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CUSTOMER SERVICE
A tradition in excellence.

Vector HD Scorer Service Manual

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Section 1: SAFETY!

NOTES & WARNINGS

Throughout this publication, “Warnings”, and “Cautions” (accompanied by one of the International HAZARD Symbols) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. They are defined below. OBSERVE AND READ THEM CAREFULLY!

These “Safety Alerts” alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus training and “Common Sense” operation are major accident prevention measures.

ℹ *NOTE or IMPORTANT!: Will designate significant informational notes.*

⚠ ***WARNING! Will designate a mechanical or nonelectrical alert which could potentially cause personal injury or death.***

⚡ ***WARNING! Will designate electrical alerts which could potentially cause personal injury or death.***

⚠ ***CAUTION! Will designate an alert which could potentially cause product damage.***

⏚ ***Will designate grounding alerts.***

SAFETY NOTICE TO USERS OF THIS MANUAL

This manual has been written and published by the Service Department of Brunswick Bowling and Billiards to aid the reader when servicing or installing the products described.

It is assumed that these personnel are familiar with, and have been trained in, the servicing or installation procedures of these products, which includes the use of common mechanic's hand tools and any special Brunswick or recommended tools from other suppliers.

We could not possibly know of and advise the reader of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not attempted any such wide evaluation. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by Brunswick, must first completely satisfy himself that neither his nor the product's safety will be endangered by the service procedure selected.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

It should be kept in mind, while working on the product, that the electrical system is capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the power to the product should be disconnected prior to servicing and remain disconnected until servicing is complete.

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SYSTEM OVERVIEW

The Brunswick Vector-HD scoring system consists of several pieces of equipment that can be divided into two subsystems; the Scoring System and the Control System.

The scoring system includes the electronic assemblies located in the bowler and pinsetter areas. These assemblies control the pinsetter, perform automatic scoring functions, provide the bowler with input capabilities, and display information about the game in progress.

The scoring system is available with keypads or LCD touchscreens (Flatscreens) and overhead screens equipped with Display Controllers that provide a high definition (HD scorer display. A Scorer Computer interfaces up to 8 lanes of the these devices. Additional equipment such as Distribution PCBs and Pin Cameras or GS pinsetters and automated bumpers are connected to the Scorer Computer as needed.

The control system consists of one or more computers located at the control desk and as needed various other locations around the bowling center. The main function of control system is to provide the bowling center personnel convenient control of the scoring system and lanes from the control desk as well as point-of-sale (POS) terminals for other areas of the center.

An optional video distribution system delivers multiple high definition and/or standard definition video channels to the overhead monitors.

GLOSSARY OF TERMS

The following terms are used in this manual. To better understand the information presented in the manual you should familiarize yourself with these terms.

CAT5 (Category 5) - A twisted pair cable used for carrying signals. In the Vector system it is used in an Ethernet network to connect the Scorer Computer(s) and Control desk computer(s) through Ethernet switch(es) allowing them to communicate. In the Vector HD system, the Display Controllers also connect to the network using Cat5 cable. For Vector SD it is used to send video from the scorer computer to the overhead monitors.

Comport - Connectors on a computer that allow it to communicate with other devices using serial communication. These connections are also referred to as serial ports or RS-232 ports. Multiple comports in a computer are referred to by number such as com1 or com2. Also refer to Serial Communication.

Distribution PCB - A circuit board located behind the pin camera on each lane pair that provides power for the pin camera, controls machine on/off and reset, and handle signals needed for scoring such as foul, sweep switch, and ball detector signals. It can also control AMF short cycle and bumpers as needed. This PCB is not present in GS-Series Pinsetter installations.

Ethernet - A protocol that specifies how computers send information to one another.

Ethernet Switch - Device that is the central point of connection for the scorer computer(s) and Control desk computer(s) in the Ethernet network. The Switch allows data to be sent/received at full transmission speeds. Also refer to Cat5.

Hard Drive - A computer’s primary storage device. The hard drive contains the programs and files that allow the computer function.

LCD Interface PCB - A optional circuit board inside the Scorer Computer that adapts the scoresheet video so that it can be displayed on lower touchscreen displays.

Motherboard - A circuit board inside a Scorer Computer or Control Desk Computer that contains the microprocessors and memory. The hard drives and most of the other PCBs in the computer connect to this board. (Also referred to as the System Board).

PCI Bus - Peripheral Component Interface Bus - A design or protocol used in many computers that defines how circuit boards connect to and use the resources provided by the motherboard. These are the medium sized, white colored slot connectors on the motherboard. The Video3 PCBs connect to the motherboard through these slots.

Power Supply - An assembly located inside a Scorer Computer that provides power to the components inside the computer, the Vector camera assembly and the Vector keypads.

Primary Patch Panel - A pair of boards located at the bottom of the Scorer Computer that provides and surge protection connections for communication for the Keypad or Touchscreen and Distribution PCB or GS Pinsetter. It also provides surge protection and connections for the overhead monitor’s video for Vector SD. The primary patch panel has connections for up to 8 lanes.

RAM (Random Access Memory) - A short term storage area for information in a computer. Most computers have this type of memory installed on small circuit boards called DIMMS.

RS-232 - The most popular type of serial communication used by computers. This type of communication allows a computer to talk to a single specific device through a 9-pin connector called a comport. Each device that the computer "talks" to will have its own dedicated comport.

RS-232 Converter - A small box used in the Vector system to translate between RS-232 and RS-485 communication. These boxes are needed for GS-Series Pinsettersand Brunswick automated bumpers.

RS-485 - A type of serial communication that allows a computer to talk to a multiple devices using one "shared" comport. Also refer to Serial Communication.

Video3 PCB - A multifunctional circuit board located in a Scorer Computer. This board processes and controls the video for the overhead monitors in the Vector SD system, processes the video received from pin cameras, provides communication for the pinsetters (Distribution PCB), and communication and audio control for the bowler's keypads / touchscreens.

If LCD touchscreens are installed a second Video3 PCB is installed to provide video for the lower screens.

Scorer Computer - Computer(s) located at the curtain wall that control the scoring functions for a up to 8 lanes.

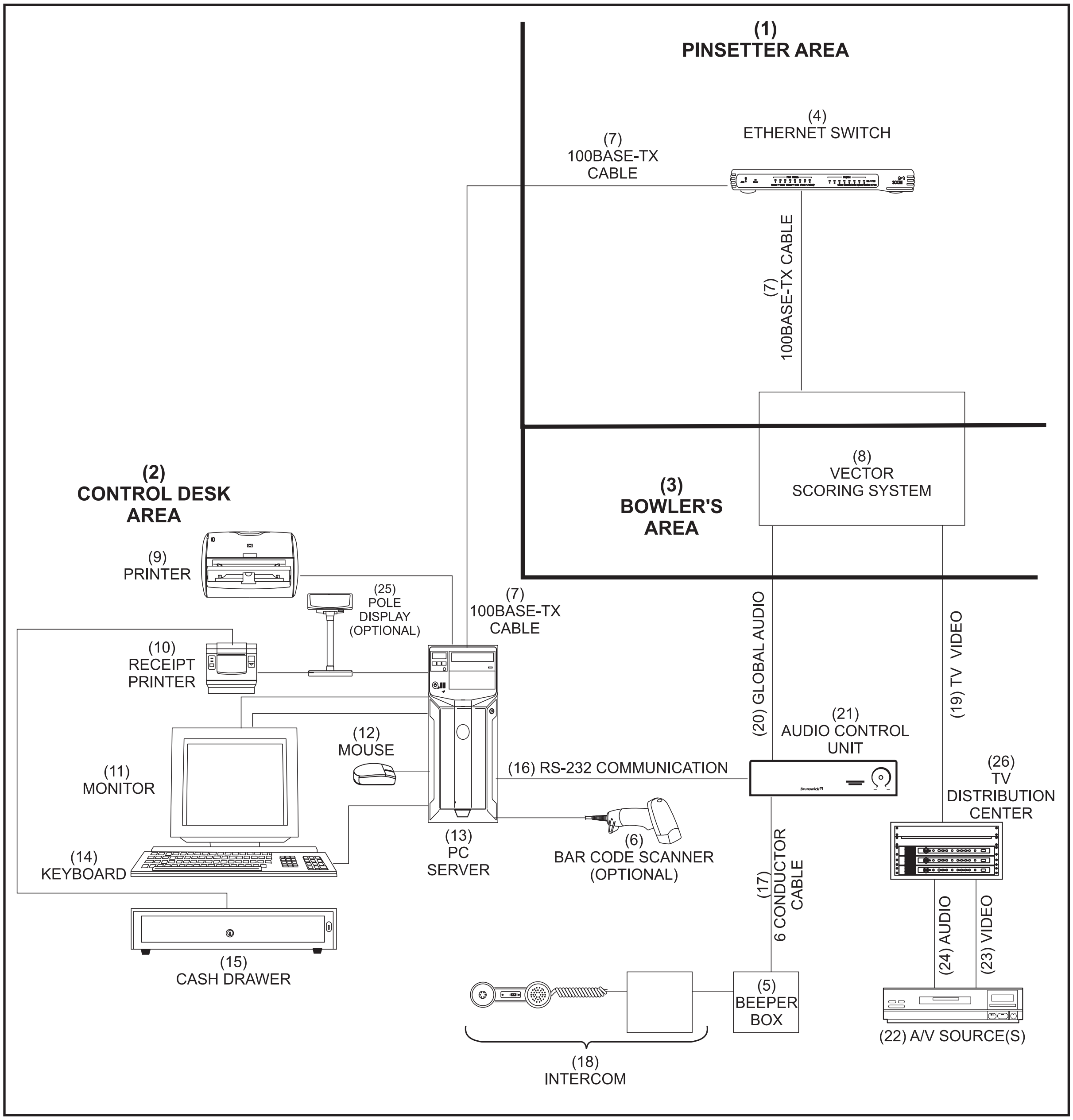
Secondary Patch Panel - An optional circuit board mounted on the right side wall of the Scorer Computer. It provides connections and surge protection for the lower LCD video. The Secondary Patch Panel has connections for 8 lanes.

Serial Communication - A popular means of transmitting data between a computer and another device. In the Vector system two types of serial communication are used; RS-232 and RS-485. Also refer to RS-232 and RS-485.

CONTROL DESK EQUIPMENT

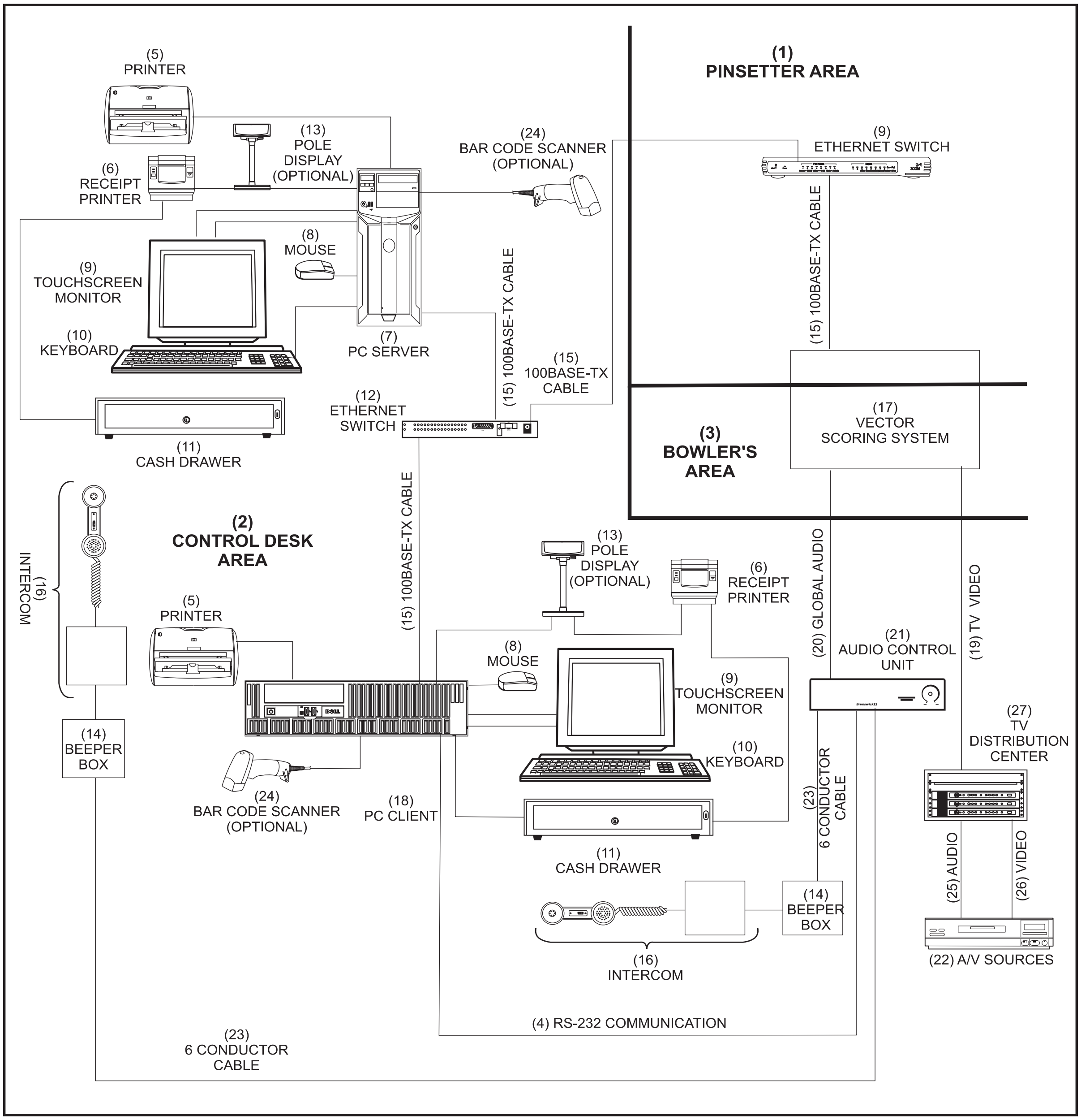
The Vector Plus control system consists of one or more computers and POS assemblies located at the control desk, and in some cases, a computer in the office. Vector Plus also provides the bowling center personnel convenient control of the scoring system while keeping track of the financial transactions and bowling activity in the center. In addition, it allows the center additional security control for the system, additional reporting of bowling activity, and an integrated league record and tournament program .

Refer to figures titled; *Vector Plus Configuration 1, Vector Plus Configuration 2, Vector Plus Configuration 3,* and *Vector Plus Configuration 4.*


(1)
PINSETTER AREA
(4)
ETHERNET SWITCH
(7)
100BASE-TX
CABLE
(7)
100BASE-TX CABLE
(2)
CONTROL DESK
AREA
(3)
BOWLER'S
AREA
(8)
VECTOR
SCORING SYSTEM
(9)
PRINTER
(25)
POLE
DISPLAY
(OPTIONAL)
(7)
100BASE-TX
CABLE
(20) GLOBAL AUDIO
(19) TV VIDEO
(10)
RECEIPT
PRINTER
(21)
AUDIO CONTROL
UNIT
(12)
MOUSE
(11)
MONITOR
(16) RS-232 COMMUNICATION
(26)
TV
DISTRIBUTION
CENTER
(14)
KEYBOARD
(13)
PC
SERVER
(6)
BAR CODE SCANNER
(OPTIONAL)
(17)
6 CONDUCTOR
CABLE
(24) AUDIO
(23) VIDEO
(15)
CASH DRAWER
(5)
BEEPER
BOX
(22) A/V SOURCE(S)
(18)
INTERCOM

Vector Plus Configuration 1

(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER'S AREA
(4) ETHERNET SWITCH
(5) BEEPER BOX
(6) BAR CODE READER OPTIONAL
(7) 100 BASE-TX CABLE
(8) VECTOR SCORING SYSTEM
(9) PRINTER
(10) RECEIPT PRINTER
(11) TOUCHSCREEN MONITOR
(12) MOUSE
(13) PC SERVER
(14) KEYBOARD
(15) CASH DRAWER
(16) RS-232 COMMUNICATION
(17) 6 CONDUCTOR CABLE
(18) INTERCOM
(19) TV VIDEO
(20) GLOBAL AUDIO
(21) AUDIO CONTROL UNIT
(22) A/V SOURCE(S)
(23) VIDEO
(24) AUDIO
(25) POLE DISPLAY
(26) TV DISTRIBUTION CENTER


(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER'S AREA
(5) PRINTER
(13) POLE DISPLAY (OPTIONAL)
(24) BAR CODE SCANNER (OPTIONAL)
(9) ETHERNET SWITCH
(6) RECEIPT PRINTER
(8) MOUSE
(9) TOUCHSCREEN MONITOR
(10) KEYBOARD
(7) PC SERVER
(15) 100BASE-TX CABLE
(15) 100BASE-TX CABLE
(15) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(11) CASH DRAWER
(17) VECTOR SCORING SYSTEM
(16) INTERCOM
(15) 100BASE-TX CABLE
(20) GLOBAL AUDIO
(19) TV VIDEO
(13) POLE DISPLAY (OPTIONAL)
(6) RECEIPT PRINTER
(5) PRINTER
(8) MOUSE
(21) AUDIO CONTROL UNIT
(9) TOUCHSCREEN MONITOR
(27) TV DISTRIBUTION CENTER
(14) BEEPER BOX
(10) KEYBOARD
(24) BAR CODE SCANNER (OPTIONAL)
(18) PC CLIENT
(23) 6 CONDUCTOR CABLE
(11) CASH DRAWER
(25) AUDIO
(26) VIDEO
(14) BEEPER BOX
(16) INTERCOM
(22) A/V SOURCES
(4) RS-232 COMMUNICATION
(23) 6 CONDUCTOR CABLE

Vector Plus Configuration 2

(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER’S AREA
(4) RS-232 COMMUNICATION
(5) PRINTER
(6) RECEIPT PRINTER
(7) PC SERVER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(11) CASH DRAWER
(12) ETHERNET SWITCH
(13) POLE DISPLAY (OPTIONAL)
(14) BEEPER BOX
(15) 100 BASE-TX CABLE
(16) INTERCOM
(17) VECTOR SCORING SYSTEM
(18) PC CLIENT
(19) TV VIDEO
(20) GLOBAL AUDIO
(21) AUDIO CONTROL UNIT
(22) A/V SOURCE(S)
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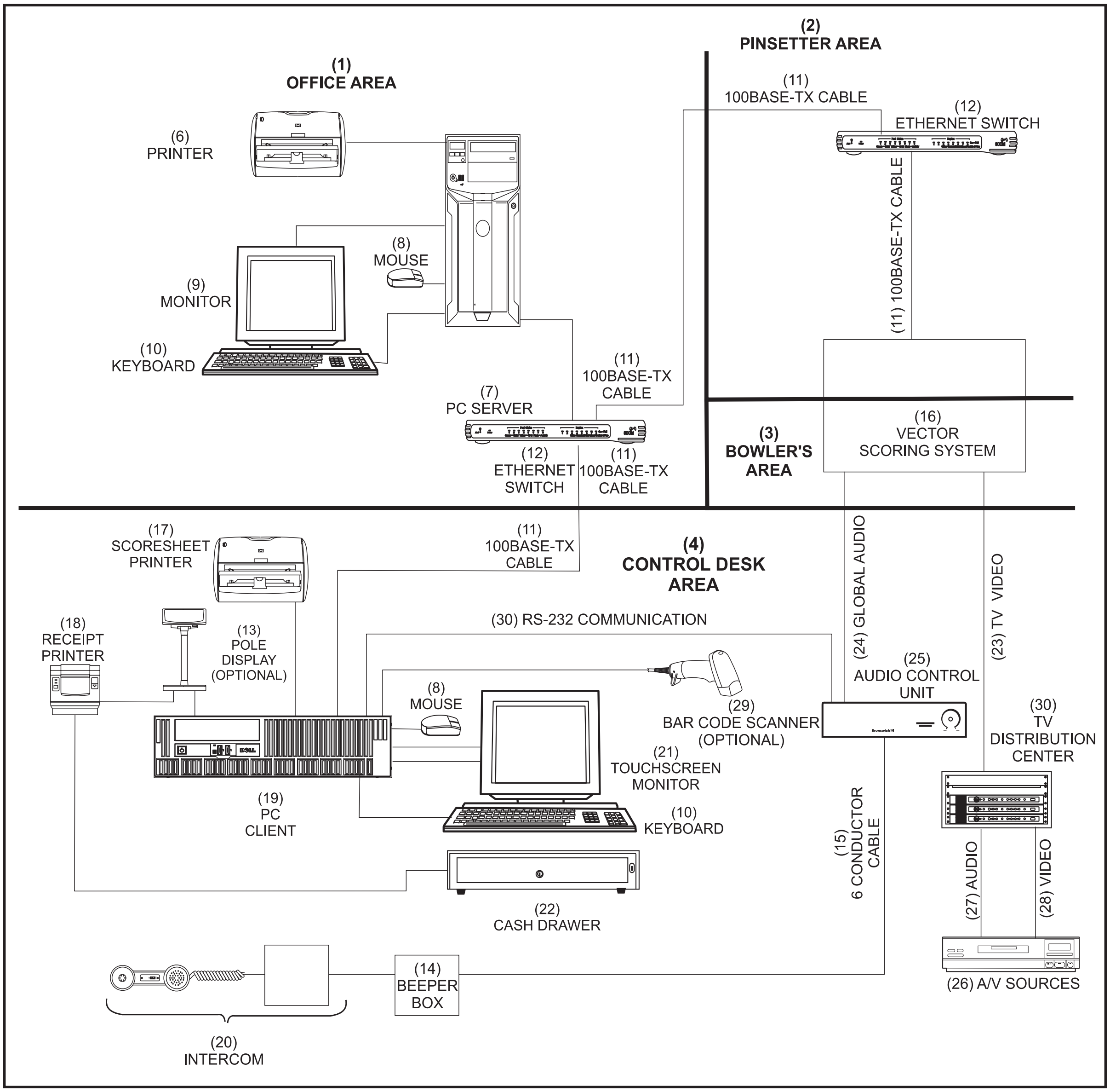
(25) AUDIO
(26) VIDEO
(27) TV DISTRIBUTION CENTER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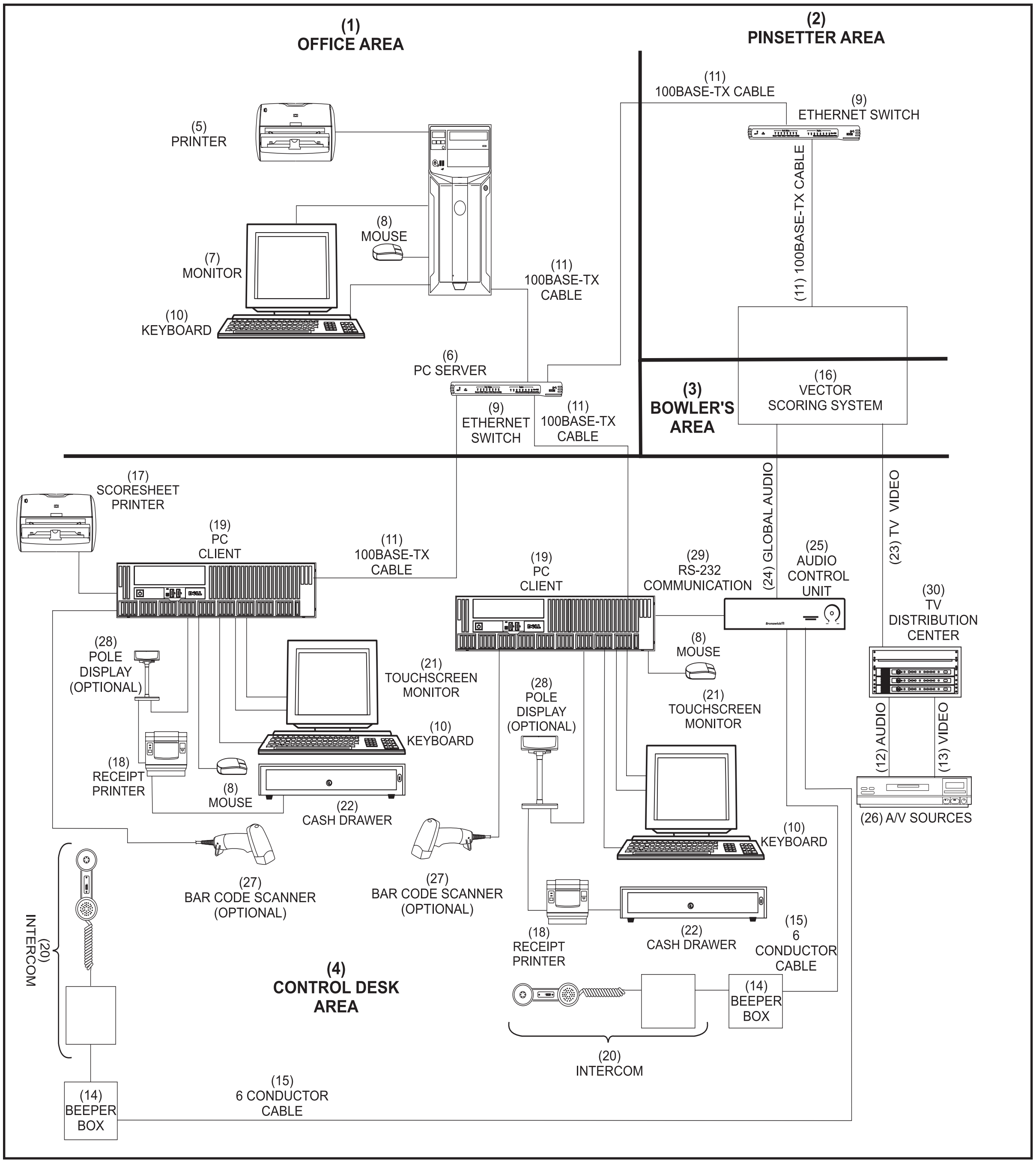
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(6) PRINTER
(7) PC SERVER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(11) 100BASE-TX CABLE
(11) 100BASE-TX CABLE
(11) 100BASE-TX CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(13) POLE DISPLAY (OPTIONAL)
(30) RS-232 COMMUNICATION
(24) GLOBAL AUDIO
(23) TV VIDEO
(25) AUDIO CONTROL UNIT
(8) MOUSE
(29) BAR CODE SCANNER (OPTIONAL)
(21) TOUCHSCREEN MONITOR
(30) TV DISTRIBUTION CENTER
(19) PC CLIENT
(10) KEYBOARD
(15) 6 CONDUCTOR CABLE
(27) AUDIO
(28) VIDEO
(22) CASH DRAWER
(14) BEEPER BOX
(26) A/V SOURCES
(20) INTERCOM

Vector Plus Configuration 3

(1) OFFICE AREA
(2) PINSETTER AREA
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(5) RS-232 COMMUNICATION
(6) PRINTER
(7) PC SERVER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(13) POLE DISPLAY (OPTIONAL)
(14) BEEPER BOX
(15) 6 CONDUCTOR CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(19) PC CLIENT
(20) INTERCOM
(21) TOUCHSCREEN MONITOR
(22) CASH DRAWER
(23) TV VIDEO
(24) GLOBAL AUDIO
(25) AUDIO CONTROL UNIT
(26) A/V SOURCES
(27) AUDIO
(28) VIDEO
(29) BAR CODE READER OPTIONAL
(30) TV DISTRIBUTION CENTER


(1)
OFFICE AREA
(2)
PINSETTER AREA
(3)
BOWLER'S
AREA
(4)
CONTROL DESK
AREA
(5)
PRINTER
(7)
MONITOR
(8)
MOUSE
(10)
KEYBOARD
(11)
100BASE-TX
CABLE
(11)
100BASE-TX CABLE
(9)
ETHERNET SWITCH
(11) 100BASE-TX CABLE
(6)
PC SERVER
(9)
ETHERNET
SWITCH
(11)
100BASE-TX
CABLE
(16)
VECTOR
SCORING SYSTEM
(17)
SCORESHEET
PRINTER
(19)
PC
CLIENT
(11)
100BASE-TX
CABLE
(19)
PC
CLIENT
(29)
RS-232
COMMUNICATION
(24) GLOBAL AUDIO
(25)
AUDIO
CONTROL
UNIT
(23) TV VIDEO
(30)
TV
DISTRIBUTION
CENTER
(28)
POLE
DISPLAY
(OPTIONAL)
(21)
TOUCHSCREEN
MONITOR
(8)
MOUSE
(28)
POLE
DISPLAY
(OPTIONAL)
(21)
TOUCHSCREEN
MONITOR
(10)
KEYBOARD
(12) AUDIO
(13) VIDEO
(18)
RECEIPT
PRINTER
(8)
MOUSE
(22)
CASH DRAWER
(26) A/V SOURCES
(10)
KEYBOARD
(27)
BAR CODE SCANNER
(OPTIONAL)
(27)
BAR CODE SCANNER
(OPTIONAL)
(20)
INTERCOM
(18)
RECEIPT
PRINTER
(22)
CASH DRAWER
(15)
6
CONDUCTOR
CABLE
(14)
BEEPER
BOX
(20)
INTERCOM
(14)
BEEPER
BOX
(15)
6 CONDUCTOR
CABLE

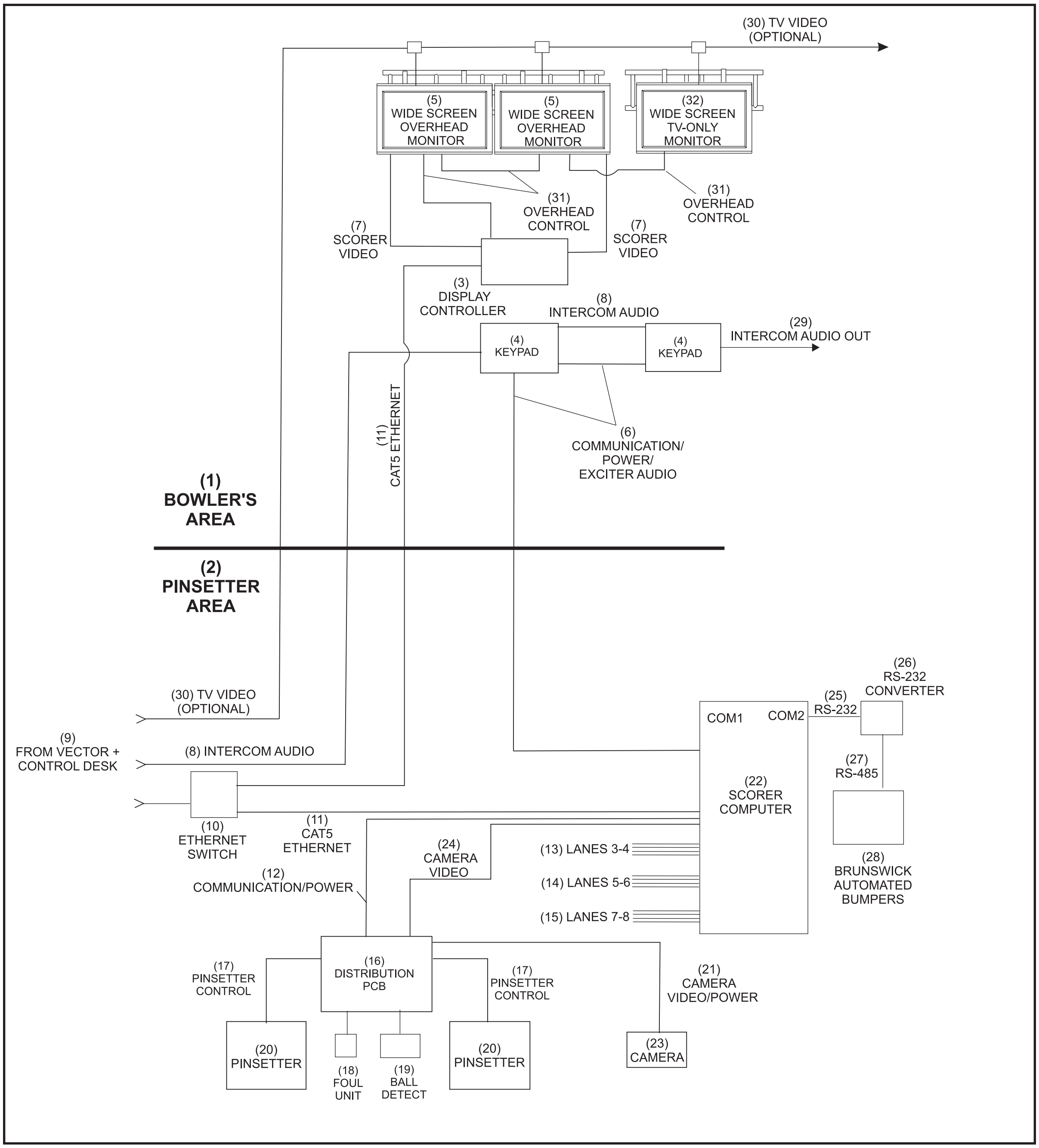
Vector Plus Configuration 4

(1) OFFICE AREA
(2) PINSETTER AREA
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(5) PRINTER
(6) PC SERVER
(7) MONITOR
(8) MOUSE
(9) ETHERNET SWITCH
(10) KEYBOARD
(11) 100BASE-TX CABLE
(12) AUDIO
(13) VIDEO
(14) BEEPER BOX
(15) 6 CONDUCTOR CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(19) PC CLIENT
(20) INTERCOM
(21) TOUCHSCREEN MONITOR
(22) CASH DRAWER
(23) TV VIDEO
(24) GLOBAL AUDIO
(25) AUDIO CONTROL UNIT
(26) A/V SOURCES
(27) BAR CODE READER (OPTIONAL)
(28) POLE DISPLAY (OPTIONAL)
(29) RS-232 COMMUNICATION
(30) TV DISTRIBUTION CENTER

VECTOR SCORER SYSTEM

The Brunswick Vector-HD scoring system consists several pieces of equipment.

The main components in the scoring system are the Scorer Computers. Each Scorer Computer is capable of controlling the bowling functions for up to 8 lanes so the number of computers needed is dependent on the number of lanes in the center. Each computer networks with the Vector Plus control system, interfaces with bowler keypads or touchscreens, controls scorer video for the overhead monitors and interfaces with the pinsetters for its group lanes. Additionally the equipment used to connect to the pinstters and obtain scoring information is dependent on whether the center is equipped with GS pinsetters. Reference the *Vector Scoring System* figures on the following pages.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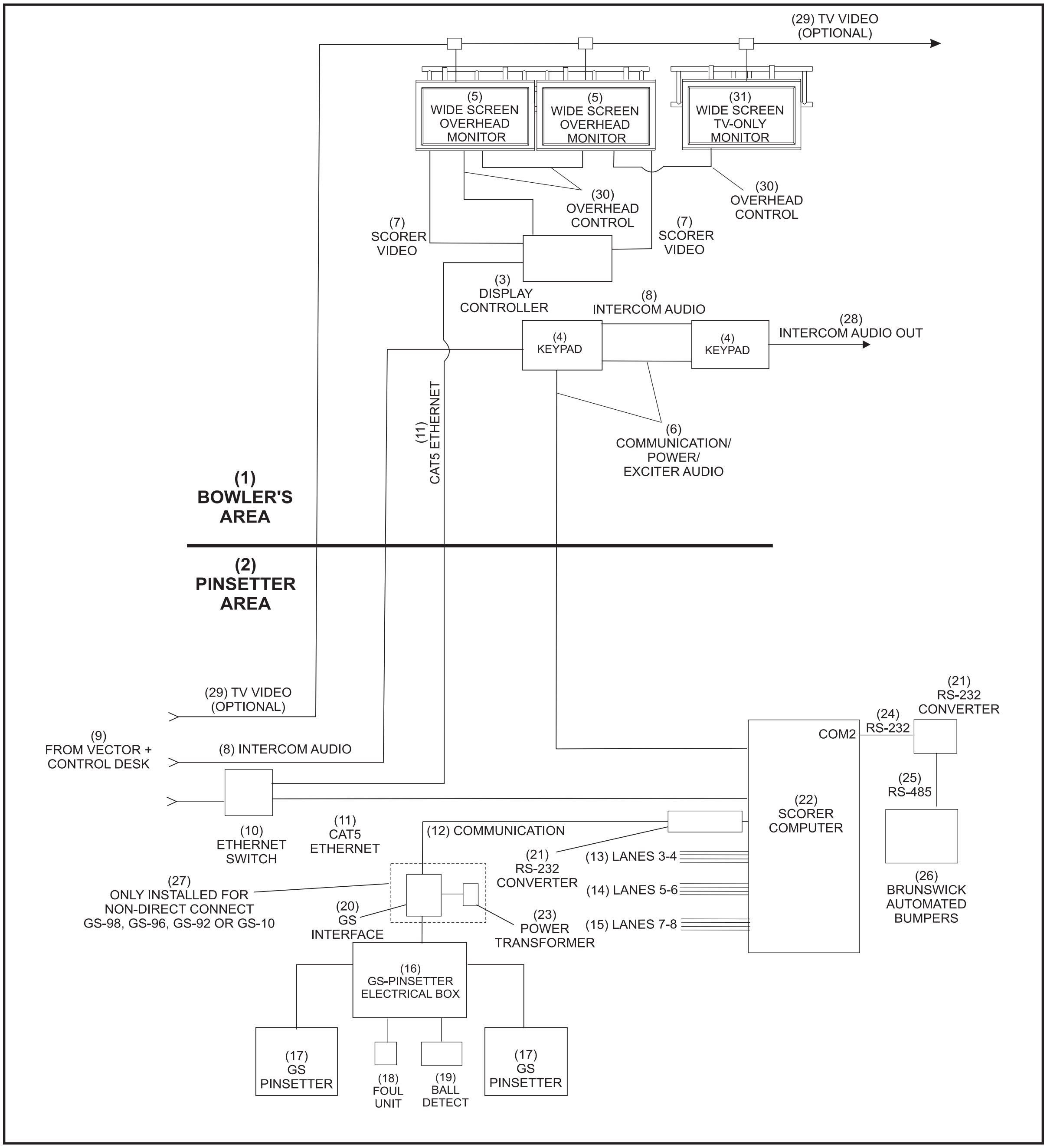
(5) WIDE SCREEN OVERHEAD MONITOR
(5) WIDE SCREEN OVERHEAD MONITOR
(32) WIDE SCREEN TV-ONLY MONITOR
(31) OVERHEAD CONTROL
(31) OVERHEAD CONTROL
(7) SCORER VIDEO
(7) SCORER VIDEO
(3) DISPLAY CONTROLLER
(8) INTERCOM AUDIO
(4) KEYPAD
(4) KEYPAD
(29) INTERCOM AUDIO OUT
(11) CAT5 ETHERNET
(6) COMMUNICATION/ POWER/ EXCITER AUDIO
(1) BOWLER'S AREA
(2) PINSETTER AREA
(26) RS-232 CONVERTER
(25) RS-232
COM1
COM2
(30) TV VIDEO (OPTIONAL)
(9) FROM VECTOR + CONTROL DESK
(8) INTERCOM AUDIO
(27) RS-485
(22) SCORER COMPUTER
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(24) CAMERA VIDEO
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(12) COMMUNICATION/POWER
(28) BRUNSWICK AUTOMATED BUMPERS
(17) PINSETTER CONTROL
(16) DISTRIBUTION PCB
(17) PINSETTER CONTROL
(21) CAMERA VIDEO/POWER
(20) PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(20) PINSETTER
(23) CAMERA

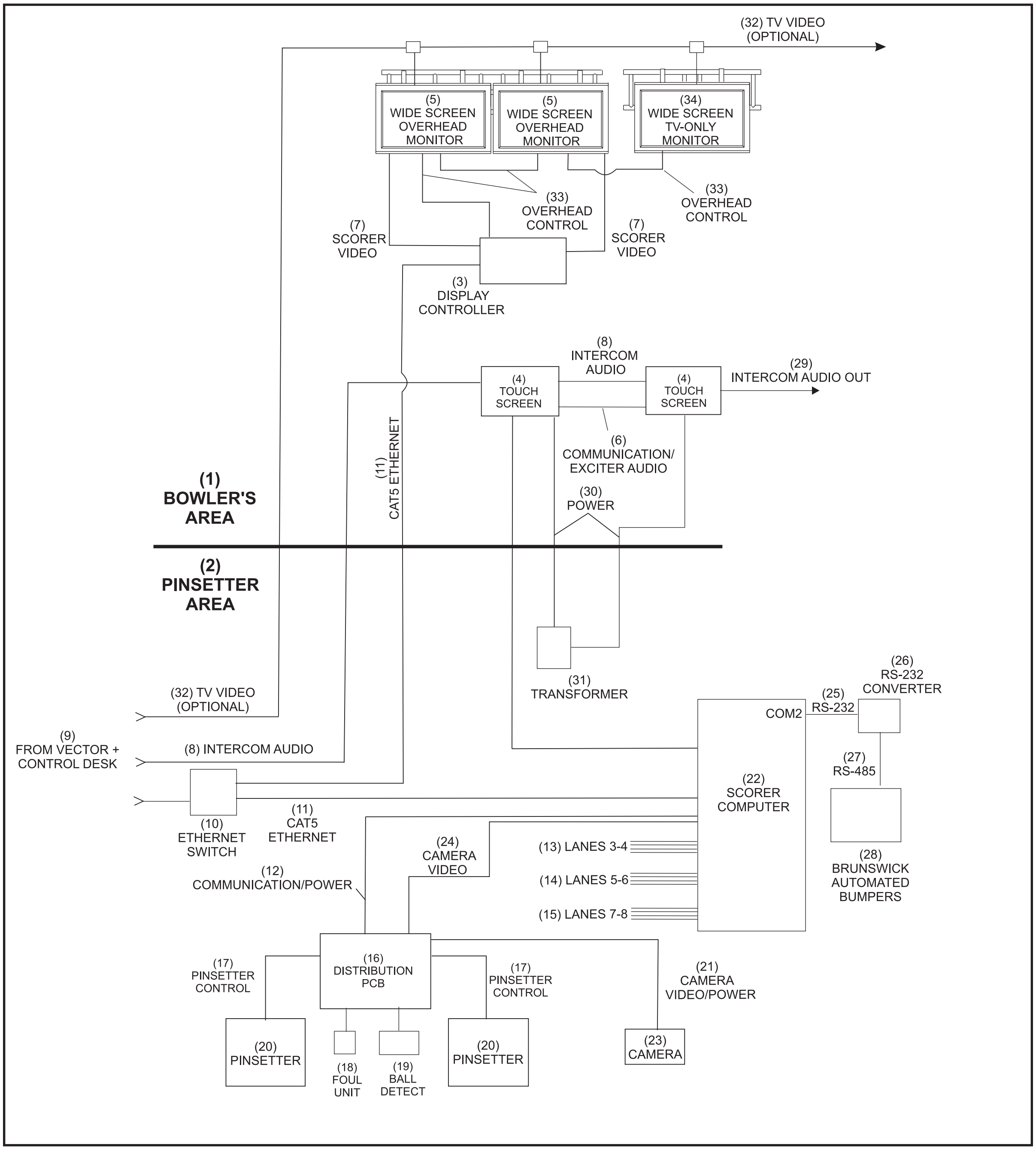
Vector HD Scoring System with Keypads and All Pinsetters Except GS-Series

(1) BOWLER’S AREA
(2) PINSETTER AREA
(3) DISPLAY CONTROLLER
(4) KEYPAD
(5) WIDE SCREEN OVERHEAD MONITOR
(6) COMMUNICATION / POWER EXCITER AUDIO
(7) SCORER VIDEO
(8) INTERCOM AUDIO
(9) FROM VECTOR CONTROL DESK
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION / POWER
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(16) DISTRIBUTION PCB
(17) PINSETTER CONTROL
(18) FOUL UNIT
(19) BALL DETECT
(20) PINSETTER
(21) CAMERA VIDEO/POWER
(22) SCORER COMPUTER
(23) CAMERA
(24) CAMERA VIDEO
(25) RS-232
(26) RS-232 CONVERTER
(27) RS-485
(28) BRUNSWICK AUTOMATED BUMPERS
(29) INTERCOM AUDIO OUT
(30) TV VIDEO (OPTIONAL)
(31) OVERHEAD CONTROL
(32) WIDE SCREEN TV-ONLY MONITOR


(29) TV VIDEO (OPTIONAL)
(5) WIDE SCREEN OVERHEAD MONITOR
(5) WIDE SCREEN OVERHEAD MONITOR
(31) WIDE SCREEN TV-ONLY MONITOR
(30) OVERHEAD CONTROL
(30) OVERHEAD CONTROL
(7) SCORER VIDEO
(7) SCORER VIDEO
(3) DISPLAY CONTROLLER
(8) INTERCOM AUDIO
(28) INTERCOM AUDIO OUT
(4) KEYPAD
(4) KEYPAD
(11) CAT5 ETHERNET
(6) COMMUNICATION/ POWER/ EXCITER AUDIO
(1) BOWLER'S AREA
(2) PINSETTER AREA
(29) TV VIDEO (OPTIONAL)
(9) FROM VECTOR + CONTROL DESK
(8) INTERCOM AUDIO
(21) RS-232 CONVERTER
(24) RS-232
COM2
(25) RS-485
(22) SCORER COMPUTER
(26) BRUNSWICK AUTOMATED BUMPERS
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION
(21) RS-232 CONVERTER
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(27) ONLY INSTALLED FOR NON-DIRECT CONNECT GS-98, GS-96, GS-92 OR GS-10
(20) GS INTERFACE
(23) POWER TRANSFORMER
(16) GS-PINSETTER ELECTRICAL BOX
(17) GS PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(17) GS PINSETTER

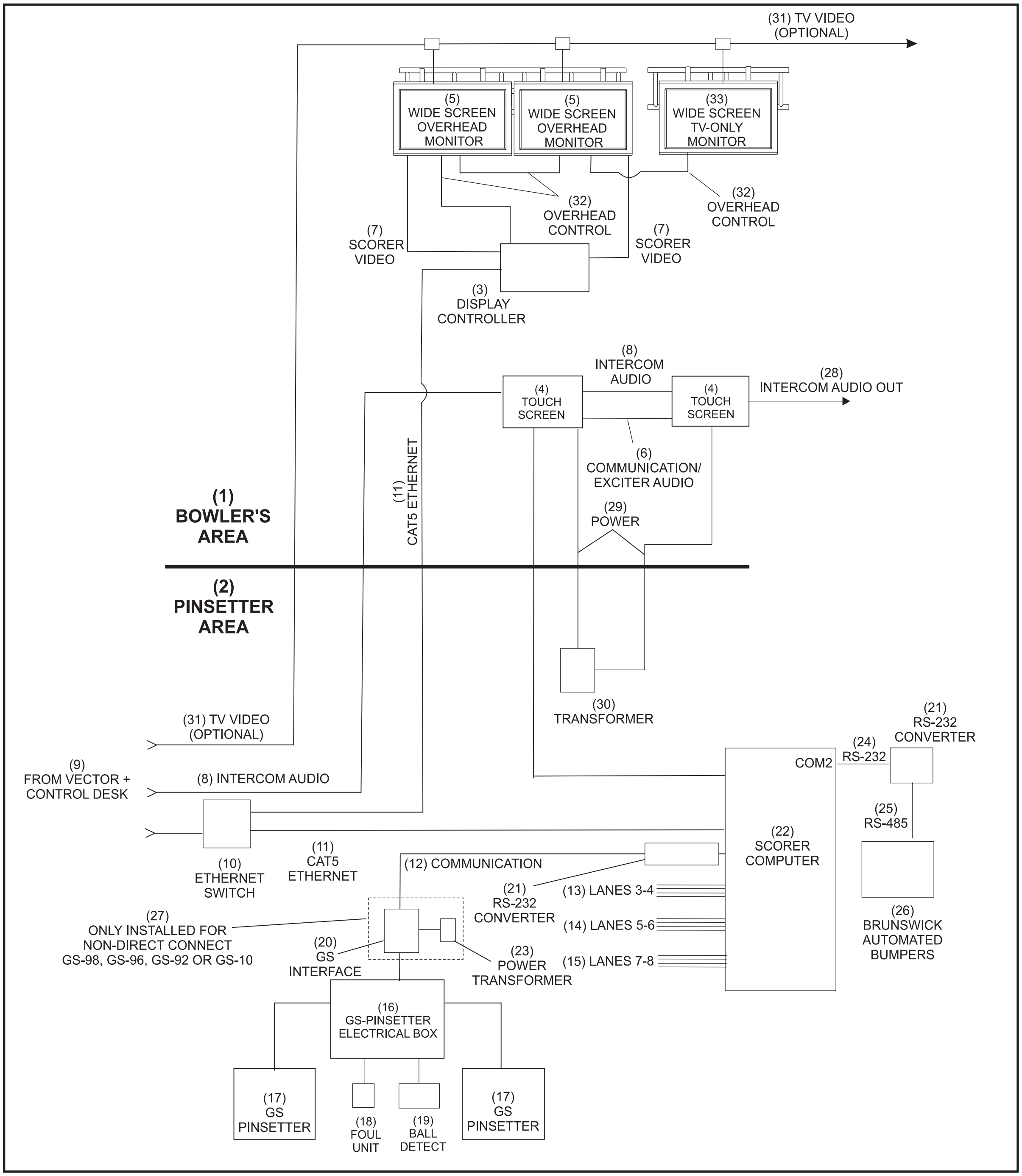
Vector HD Scoring System With Keypads and GS-Series Pinsetters

(1) BOWLER'S AREA
(2) PINSETTER AREA
(3) DISPLAY CONTROLLER
(4) KEYPAD
(5) WIDE SCREEN OVERHEAD MONITOR
(6) COMMUNICATION / POWER EXCITER AUDIO
(7) SCORER VIDEO
(8) INTERCOM AUDIO
(9) FROM VECTOR CONTROL DESK
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(16) GS PINSETTER ELECTRICAL BOX
(17) GS - PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(20) GS INTERFACE
(21) RS-232 CONVERTER
(22) SCORER COMPUTER
(23) POWER TRANSFORMER
(24) RS-232
(25) RS-485
(26) BRUNSWICK AUTOMATED BUMPERS
(27) ONLY INSTALLED FOR NON-DIRECT CONNECT GS-98, GS-96, GS-92 OR GS-10
(28) INTERCOM AUDIO OUT
(29) TV VIDEO (OPTIONAL)
(30) OVERHEAD CONTROL
(31) WIDE SCREEN TV-ONLY MONITOR


(32) TV VIDEO (OPTIONAL)
(5) WIDE SCREEN OVERHEAD MONITOR
(5) WIDE SCREEN OVERHEAD MONITOR
(34) WIDE SCREEN TV-ONLY MONITOR
(33) OVERHEAD CONTROL
(33) OVERHEAD CONTROL
(7) SCORER VIDEO
(7) SCORER VIDEO
(3) DISPLAY CONTROLLER
(8) INTERCOM AUDIO
(4) TOUCH SCREEN
(4) TOUCH SCREEN
(29) INTERCOM AUDIO OUT
(6) COMMUNICATION/ EXCITER AUDIO
(11) CAT5 ETHERNET
(30) POWER
(1) BOWLER'S AREA
(2) PINSETTER AREA
(31) TRANSFORMER
(32) TV VIDEO (OPTIONAL)
(9) FROM VECTOR + CONTROL DESK
(8) INTERCOM AUDIO
(26) RS-232 CONVERTER
(25) RS-232
COM2
(27) RS-485
(22) SCORER COMPUTER
(28) BRUNSWICK AUTOMATED BUMPERS
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(24) CAMERA VIDEO
(12) COMMUNICATION/POWER
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(17) PINSETTER CONTROL
(16) DISTRIBUTION PCB
(17) PINSETTER CONTROL
(21) CAMERA VIDEO/POWER
(20) PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(20) PINSETTER
(23) CAMERA

Vector HD Scoring System with Touchscreens and All Pinsetters except GS-Series

(1) BOWLER'S AREA
(2) PINSETTER AREA
(3) DISPLAY CONTROLLER
(4) TOUCHSCREEN
(5) WIDE SCREEN OVERHEAD MONITOR
(6) COMMUNICATION / EXCITER AUDIO
(7) SCORER VIDEO
(8) INTERCOM AUDIO
(9) FROM VECTOR CONTROL DESK
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION / POWER
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(16) DISTRIBUTION PCB
(17) PINSETTER CONTROL
(18) FOUL UNIT
(19) BALL DETECT
(20) PINSETTER
(21) CAMERA VIDEO/POWER
(22) SCORER COMPUTER
(23) CAMERA
(24) CAMERA VIDEO
(25) RS-232
(26) RS-232 CONVERTER
(27) RS-485
(28) BRUNSWICK AUTOMATED BUMPERS
(29) INTERCOM AUDIO OUT
(30) POWER
(31) TRANSFORMER
(32) TV VIDEO (OPTIONAL)
(33) OVERHEAD CONTROL
(34) WIDE SCREEN TV-ONLY MONITOR


(31) TV VIDEO (OPTIONAL)
(5) WIDE SCREEN OVERHEAD MONITOR
(5) WIDE SCREEN OVERHEAD MONITOR
(33) WIDE SCREEN TV-ONLY MONITOR
(32) OVERHEAD CONTROL
(32) OVERHEAD CONTROL
(7) SCORER VIDEO
(7) SCORER VIDEO
(3) DISPLAY CONTROLLER
(8) INTERCOM AUDIO
(4) TOUCH SCREEN
(4) TOUCH SCREEN
(28) INTERCOM AUDIO OUT
(11) CAT5 ETHERNET
(6) COMMUNICATION/ EXCITER AUDIO
(1) BOWLER'S AREA
(29) POWER
(2) PINSETTER AREA
(30) TRANSFORMER
(31) TV VIDEO (OPTIONAL)
(9) FROM VECTOR + CONTROL DESK
(8) INTERCOM AUDIO
(21) RS-232 CONVERTER
(24) RS-232
COM2
(25) RS-485
(22) SCORER COMPUTER
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION
(21) RS-232 CONVERTER
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(26) BRUNSWICK AUTOMATED BUMPERS
(27) ONLY INSTALLED FOR NON-DIRECT CONNECT GS-98, GS-96, GS-92 OR GS-10
(20) GS INTERFACE
(23) POWER TRANSFORMER
(16) GS-PINSETTER ELECTRICAL BOX
(17) GS PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(17) GS PINSETTER

Vector HD Scoring System with Touchscreens and GS-Series Pinsetters

(1) BOWLER'S AREA
(2) PINSETTER AREA
(3) DISPLAY CONTROLLER
(4) TOUCHSCREEN
(5) WIDE SCREEN OVERHEAD MONITOR
(6) COMMUNICATION / POWER EXCITER AUDIO
(7) SCORER VIDEO
(8) INTERCOM AUDIO
(9) FROM VECTOR CONTROL DESK
(10) ETHERNET SWITCH
(11) CAT5 ETHERNET
(12) COMMUNICATION
(13) LANES 3-4
(14) LANES 5-6
(15) LANES 7-8
(16) GS PINSETTER ELECTRICAL BOX
(17) GS - PINSETTER
(18) FOUL UNIT
(19) BALL DETECT
(20) GS INTERFACE
(21) RS-232 CONVERTER
(22) SCORER COMPUTER
(23) POWER TRANSFORMER
(24) RS-232
(25) RS-485
(26) BRUNSWICK AUTOMATED BUMPERS
(27) ONLY INSTALLED FOR NON-DIRECT CONNECT GS-98, GS-96, GS-92 OR GS-10
(28) INTERCOM AUDIO OUT
(29) POWER
(30) TRANSFORMER
(31) TV VIDEO (OPTIONAL)
(32) OVERHEAD CONTROL
(33) WIDE SCREEN TV-ONLY MONITOR

BOWLER'S AREA

The bowler's area contains all of the components that allow the bowlers to interface with scoring system. Components that are found in the bowler's area include:

Overhead Monitors
Touchscreen Flatscreens or Keypads
Display Controllers

Overhead Monitors

The overhead monitors provided by Brunswick are individual wide screen LED flat panel monitors or in some cases LED TVs.

In a Vector-SD installation the overhead monitors are used to exclusively display the scorer video cabled from the scorer computer.

With Vector-HD, the monitors display the high definition scorer video produced by the Display Controllers. The monitors can also display video originating from the optional TV Distribution Center. A TV-Only version of the monitor that displays only the video from the Distribution Center is also available.

Keypads

The keypad is a full function keyboard that allows the bowler to enter all information needed to begin bowling or change/correct information once bowling has begun. The use of a keypad gives the bowler complete control over bowling functions without the cost of a lower display.

Touchscreens

The flatscreen is a touch-sensitive LCD display that allows the bowler to directly select options by simply touching the screen.

Display Controllers

The Display Controllers are behind the left lane overhead monitors. The controller produces high definition scorer video and controls the on/off and video input selection for the overhead monitors of a lane pair.

Ethernet Switch

The Ethernet Switch allows communication from the Vector Network to branch to the Display Controllers. The 24 port switch connects to the 8-port ethernet switch located near the scorer computers and provides communication for up to 23 Display Controllers (46 Lanes) The switch is normally located near the overhead monitors toward the center of the bowling center .

PINSETTER AREA

The pinsetter area contains equipment used to interface the pinsetter and office computer to the lane pair. This equipment is typically mounted on a panel attached to the curtain wall. Equipment may include:

Ethernet Switch
Distribution PCBs
Pin Cameras
Scorer Computers

Ethernet Switch

The Ethernet Switch allows communication from the control desk computer(s) to branch to the individual Scorer Computers and to other switches.   A typical switch splits communication into 8 branches allowing one switch to provide communication for up to 7 Scorer Computers (56 Lanes) and the Control Desk Computer. The switch is located on the curtain wall.

Scorer Computer

The Scorer Computer contains the circuit boards that controls the scoring functions for up to 8 lanes. It handles calculations for scoring, video for the monitors, and communication to the control desk.

The Scorer Computers are located on the curtain wall so that each computer can be connected for optimal performance.

Distribution PCB

The Distribution PCB is a circuit board located behind the pin camera on each lane pair. It interfaces the pin camera, A-2, and AMF pinsetters and foul signals, automated bumper control, and ball detector signals to the Scorer Computer. The distribution board is not used when GS pinsetters are installed.

RS-232 Converter

The RS-232 Converter is a small box used to convert the RS-232 communication protocol to RS-485 protocol. These boxes are used between the Scorer Computer and GS pinsetters, TV-Only monitors, Brunswick automated bumpers, and Brunswick provided widescreen overhead monitors.

GS Interface

The GS Interface box converts RS-485 communication protocol to HDLC (High Level Data Link Control). HDLC was the communication protocol used by Gamesetter box in GS-10, GS92 and GS-96 pinsetters, and the Consolidated Low Voltage box in non-direct connect GS-98 pinsetters.

CONTROL DESK/OFFICE AREA

The control desk/office area contains the equipment needed to remotely control Vector scoring system, provide point of sale (POS) capability, keep track of financial data, and interface leagues and tournaments to the scorers. It may consist of:

Computers complete with Monitors, Keyboard, and Mouse
Cash Drawers
Audio Control Unit
Intercom Handset(s)
Scoresheet Printer(s)
Receipt Printer(s)
Bar Code Reader

Cash Drawer

The cash drawer opens automatically at the proper time giving the control desk operator a convenient place to put money received during transaction. The drawer gets power to open from the receipt printer.

Audio Control Unit

The audio control unit is used to adapt the intercom to Vector keypad/touchscreens.

Intercom Handset

The intercom handset provides a convenient "telephone" style communication to the touchscreens or keypads in the bowlers area. Two intercom lines are provided allowing the control desk to talk to two different lanes at the same time.

Scoresheet Printer

The scoresheet printer allows the control desk operator to obtain a hard copy of a bowler's scores. Scoresheets can be printed for the current game as well previous games for up to 7 days.

Computer(s)

The Vector or Vector Plus control desk system consisting of one or more computer (PC) located at the control desk running the Windows XP or 2003 Server operating system and Vector/Vector Plus control desk software.

The PC has a keyboard, monitor, and mouse connected to it. Additional equipment attached to the computer can include a receipt printer, cash drawer, customer pole display, and bar code reader.

Bar Code Reader

The bar code reader allows the use of bowler cards to simplify the tracking of frequent open play bowlers. When a bowler's card is scanned their information is retrieved from the Vector computer. The bowler's name is automatically sent to the console when they are assigned to a lane and their scores will transfer back to the computer at the end of each game. It can also be used to scan an item's barcode to automatically obtain pricing as part of a sales transaction.

SYSTEM SIGNALS

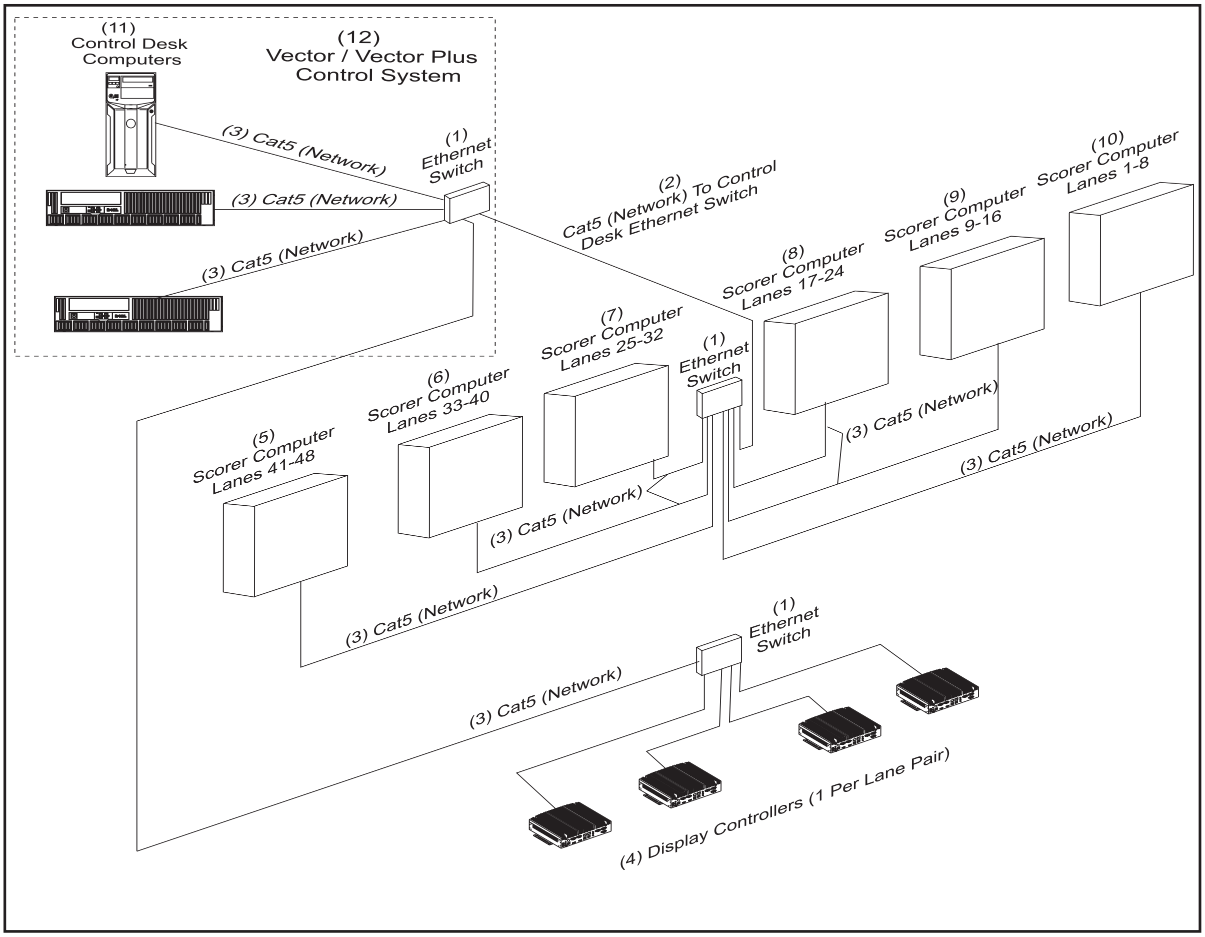
The signals used in the Vector scoring system can be divided into 3 types; Communication / Control, Video, and Audio.

Communication/Control

Communication between components in the Vector system is handled using either an Ethernet network or a serial communication.

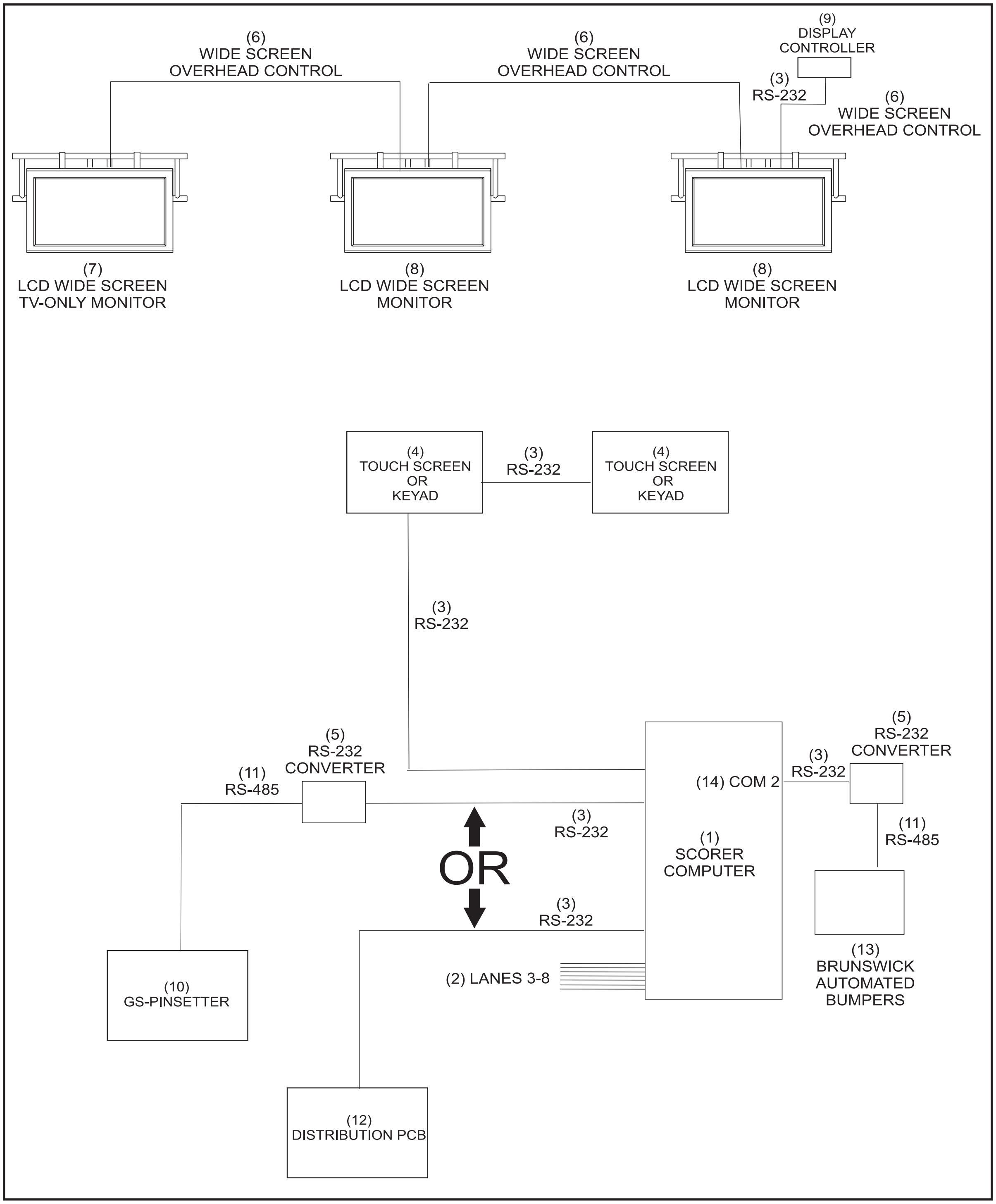
Ethernet provides communication between the control desk computer(s) and the Scorer computers and between the Scorer Computers and the Display Controllers. Refer to the figures titled *Vector Ethernet Cabling - 8 Lane Scoring Computer.*

Serial communication allows a scorer computer to communicate with components within the lane group it controls. RS-232 is used by the scorer computer to “talk” to most of these components. This signal is converted to RS-485 for GS pinsetters and Brunswick Automated Bumpers. The Display Controllers use RS-232 to turn the overhead monitors on/off and to switch video inputs. Refer to the figure titled *Vector Lane Pair Communication Cabling.*


(11) Control Desk Computers
(12) Vector / Vector Plus Control System
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(3) Cat5 (Network)
(2) Cat5 (Network) To Control Desk Ethernet Switch
(10) Scorer Computer Lanes 1-8
(9) Scorer Computer Lanes 9-16
(8) Scorer Computer Lanes 17-24
(7) Scorer Computer Lanes 25-32
(1) Ethernet Switch
(6) Scorer Computer Lanes 33-40
(5) Scorer Computer Lanes 41-48
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(4) Display Controllers (1 Per Lane Pair)

Vector HD Ethernet Cabling

(1) ETHERNET SWITCH
(2) CAT5 CABLE TO CONTROL DESK
(3) CAT5 (NETWORK)
(4) DISPLAY CONTROLLERS (ONE PER LANE PAIR)
(5) SCORER COMPUTER LANES 41-48
(6) SCORER COMPUTER LANES 33-40
(7) SCORER COMPUTER LANES 25-32
(8) SCORER COMPUTER LANES 17-24
(9) SCORER COMPUTER LANES 9-16
10) SCORER COMPUTER LANES 1-8
(11) CONTROL DESK COMPUTERS
(12) VECTOR / VECTOR PLUS CONTROL SYSTEM

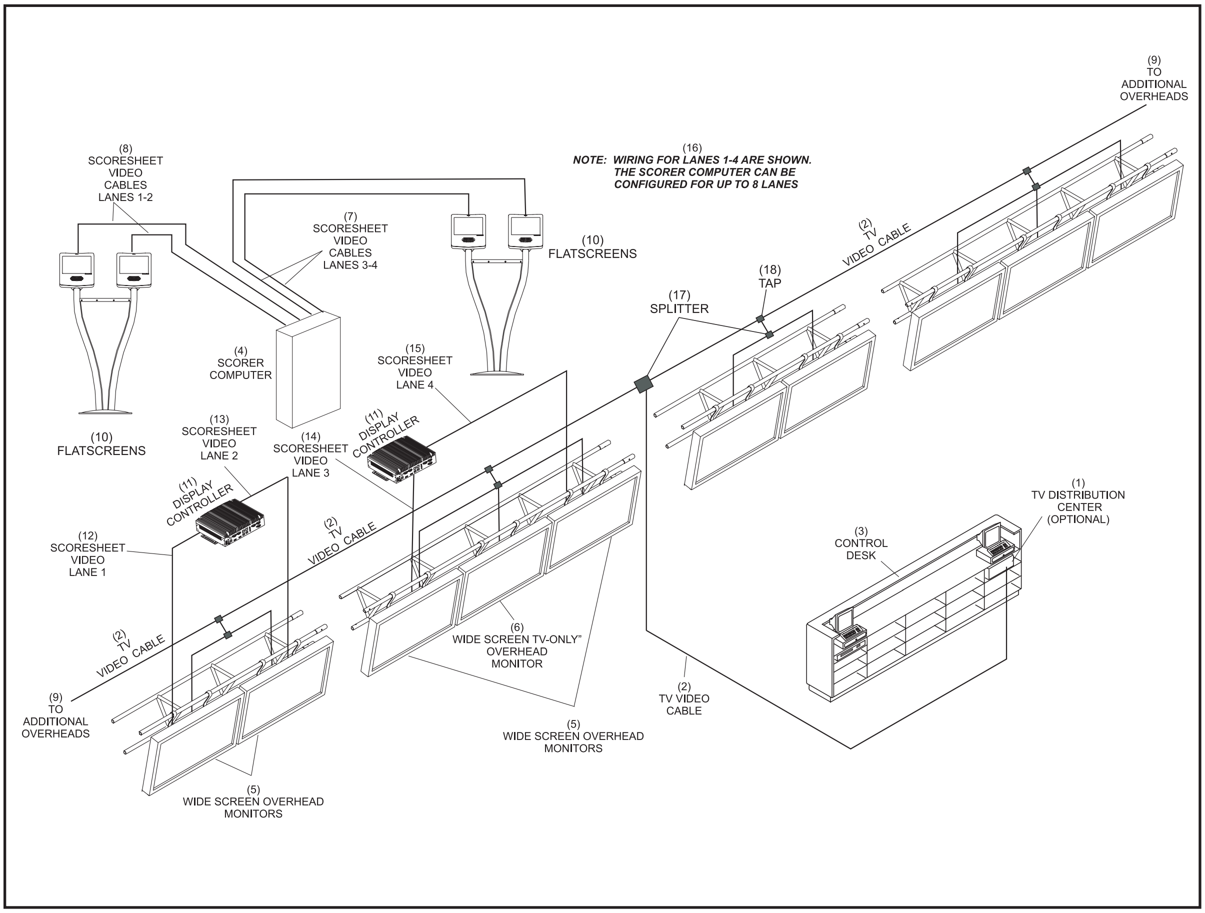

(6) WIDE SCREEN OVERHEAD CONTROL
(6) WIDE SCREEN OVERHEAD CONTROL
(9) DISPLAY CONTROLLER
(3) RS-232
(6) WIDE SCREEN OVERHEAD CONTROL
(7) LCD WIDE SCREEN TV-ONLY MONITOR
(8) LCD WIDE SCREEN MONITOR
(8) LCD WIDE SCREEN MONITOR
(4) TOUCH SCREEN OR KEYAD
(3) RS-232
(4) TOUCH SCREEN OR KEYAD
(3) RS-232
(5) RS-232 CONVERTER
(11) RS-485
(5) RS-232 CONVERTER
(3) RS-232
(14) COM 2
(3) RS-232
OR
(1) SCORER COMPUTER
(11) RS-485
(3) RS-232
(2) LANES 3-8
(13) BRUNSWICK AUTOMATED BUMPERS
(10) GS-PINSETTER
(12) DISTRIBUTION PCB

Vector - HD Lane Pair Communication Cabling (One Lane Pair Shown)

(1) SCORER COMPUTER
(2) LANES 3-8
(3) RS-232
(4) TOUCH SCREEN OR KEYPAD
(5) RS-232 CONVERTER
(6) WIDE SCREEN OVERHEAD CONTROL
(7) LCD WIDE SCREEN TV-ONLY MONITOR
(8) LCD WIDE SCREEN MONITOR
(9) DISPLAY CONTROLLER
(10) GS-PINSETTER
(11) RS-485
(12) DISTRIBUTION PCB
(13) BRUNSWICK AUTOMATED BUMPERS
(14) COM 2

Video

Two types of video are used in the Vector-HD system; Scoresheet and TV. The scoresheet video originates in the scorer computer and routes to optional lower flatscreen displays through a cat5 cable. Scorer video the overhead displays is generated by the Display Controller and connected to the displays through an HDMI cable. The TV signal originates at the control desk and is daisy chained to each overhead in the system. Refer to the figure titled *Vector System - Video Cabling (Wide Screen Overheads).*

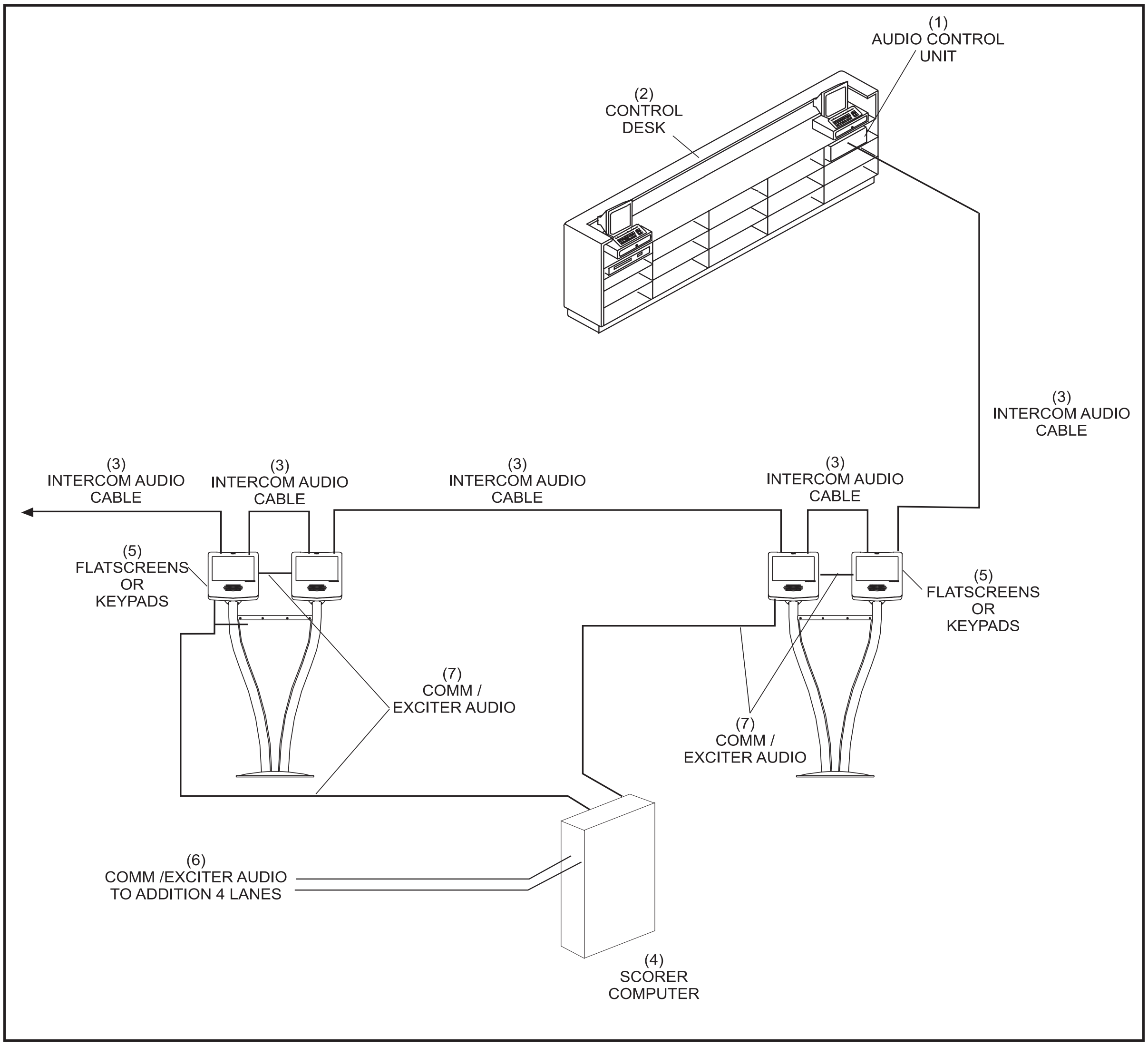

(9) TO ADDITIONAL OVERHEADS
(8) SCORESHEET VIDEO CABLES LANES 1-2
(16) NOTE: WIRING FOR LANES 1-4 ARE SHOWN. THE SCORER COMPUTER CAN BE CONFIGURED FOR UP TO 8 LANES
(7) SCORESHEET VIDEO CABLES LANES 3-4
(10) FLATSCREENS
(2) TV VIDEO CABLE
(18) TAP
(17) SPLITTER
(4) SCORER COMPUTER
(15) SCORESHEET VIDEO LANE 4
(11) DISPLAY CONTROLLER
(10) FLATSCREENS
(13) SCORESHEET VIDEO LANE 2
(14) SCORESHEET VIDEO LANE 3
(11) DISPLAY CONTROLLER
(1) TV DISTRIBUTION CENTER (OPTIONAL)
(3) CONTROL DESK
(12) SCORESHEET VIDEO LANE 1
(2) TV VIDEO CABLE
(2) TV VIDEO CABLE
(6) WIDE SCREEN TV-ONLY" OVERHEAD MONITOR
(9) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(5) WIDE SCREEN OVERHEAD MONITORS
(5) WIDE SCREEN OVERHEAD MONITORS

Vector-HD Video Cabling

(1) TV DISTIBUTION CENTER
(2) TV VIDEO CABLES
(3) CONTROL DESK
(4) SCORER COMPUTER
(5) WIDE SCREEN OVERHEAD MONITORS
(6) WIDE SCREEN TV-ONLY OVERHEAD MONITORS
(7) SCORESHEET VIDEO CABLES LANES 3-4
(8) SCORESHEET VIDEO CABLES LANES 1 & 2
(9) TO ADDITIONAL OVERHEADS
(10) FLATSCREENS
(11) DISPLAY CONTROLLER
(12) SCORESHEET VIDEO LANE 1
(13) SCORESHEET VIDEO LANE 2
(14) SCORESHEET VIDEO LANE 3
(15) SCORESHEET VIDEO LANE 4
(16) NOTE: WIRING FOR LANES 1-4 ARE SHOWN. THE SCORER COMPUTER CAN BE CONFIGURED FOR UP TO 8 LANES
(17) SPLITTER
(18) TAP

Audio

The audio for the Vector system originates from the scorer computer and the control desk's audio control unit. The scorer computer generates the exciter audio used in conjunction with the exciter graphics. This signal is integrated into the communication cable for the keypad or flatscreens.
The audio control unit at the control desk provides intercom audio through a cable referred to as the global audio cable. This cable is routed to the keypad or flatscreen closest to the control desk. It then daisy-chains to the rest of the lanes. Refer to the figure titled *Vector System - Audio Cabling.*



(1) AUDIO CONTROL UNIT
(2) CONTROL DESK
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(5) FLATSCREENS OR KEYPADS
(5) FLATSCREENS OR KEYPADS
(7) COMM / EXCITER AUDIO
(7) COMM / EXCITER AUDIO
(6) COMM /EXCITER AUDIO TO ADDITION 4 LANES
(4) SCORER COMPUTER

Vector System - Audio Cabling

(1) AUDIO CONTROL UNIT
(2) CONTROL DESK
(3) INTERCOM AUDIO CABLE
(4) SCORER COMPUTER
(5) FLATSCREENS OR KEYPADS
(6) COMM / EXCITER AUDIO TO ADDITIONAL 4 LANES
(7) COMM / EXCITER AUDIO

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GLOSSARY OF TERMS

The following terms are used in this section. To better understand the information presented in the section you should familiarize yourself with these terms.

100Base -TX - Twisted pair cabling used in an Ethernet network and in some installations provides video for the LCD screens. This cable type connects the Scorer Computer(s) and Control desk computer(s) to the Ethernet switch(es) allowing them to communicate. Some installations use this type of cabling to connect the scorer computer to the LCD touchscreens and overhead monitors. This cable is sometimes referred to a Cat5 cable because category 5 communication wiring is used to make the cable. Also refer to Ethernet Switch.

BIOS (Basic Input/Output System) - A program stored in a EPROM (erasable programmable read-only memory) chip located on the Motherboard. This program controls how information is transferred between the components and circuit boards inside a computer.

Distribution PCB - A circuit board located behind the pin camera on each lane pair that provides power for the pin camera, controls machine on/off and reset, and handle signals needed for scoring such as foul, sweep switch, and ball detector signals. It can also control AMF short cycle and bumpers as needed. This PCB is not present in GS-Series Pinsetter installations.

Ethernet - A protocol that specifies how computers send information to one another.

Ethernet Switch - Device that is the central point of connection for the scorer computer(s) and Control desk computer(s) in the Ethernet network. The Switch allows data to be sent/received at full transmission speeds. Also refer to 100Base-TX.

Hard Drive - A computer’s primary storage device. The hard drive contains the programs and files that make the computer function.

LCD Interface PCB - A circuit board in the Scorer Computer that adapts the scoresheet video so that it can be displayed on the lower touchscreen displays.

Motherboard - A circuit board inside a Scorer Computer or Control Desk Computer that contains the microprocessors and memory. The hard drives and most of the other PCBs in the computer connect to this board. (Also referred to as the System Board).

PCI Bus - Peripheral Component Interface Bus - A design or protocol used in many computers that defines how circuit boards connect to and use the resources provided by the motherboard. These are the medium sized, white- colored slot connectors on the motherboard. The Video3 PCBs connect to the motherboard through these slots.

Power Supply - An assembly located inside a computer that provides power to the components inside the computer, the Vector camera assembly and the Vector keypads.

Primary Patch Panel - A pair of boards mounted to the bottom of the Scorer Computer that provides connection points and surge protection for the overhead monitors, Keypad/Touchscreen, Distribution PCB/GS Pinsetter and Brunswick automated bumpers. The primary patch panel has connections for 8 lanes.

RAM (Random Access Memory) - A short term storage area for information in a computer. Most computers have this type of memory installed on small circuit boards called DIMMs.

RS-232 - The most popular type of serial communication used by computers. This type of communication allows a computer to talk to a single specific device through a 9-pin connector called a comport. Each device that the computer "talks" to will have its own dedicated comport.

RS-232 Converter - A small box used in the Vector system to translate between RS-232 and RS-485 communication. These boxes are needed for GS-Series Pinsetters and Brunswick automated bumpers.

RS-485 - A type of serial communication that allows a computer to talk to a multiple devices using one "shared" comport. Also refer to Serial Communication.

Video3 PCB - A multifunctional circuit board located in a Scorer Computer. This board processes and controls the video for the display monitors, processes the video received from the pin cameras, and provides communication for the pinsetters (Distribution PCB) and communication and audio control for the scoring consoles.

If LCD touchscreens are installed a second Video3 PCB is installed to process the video the lower screens.

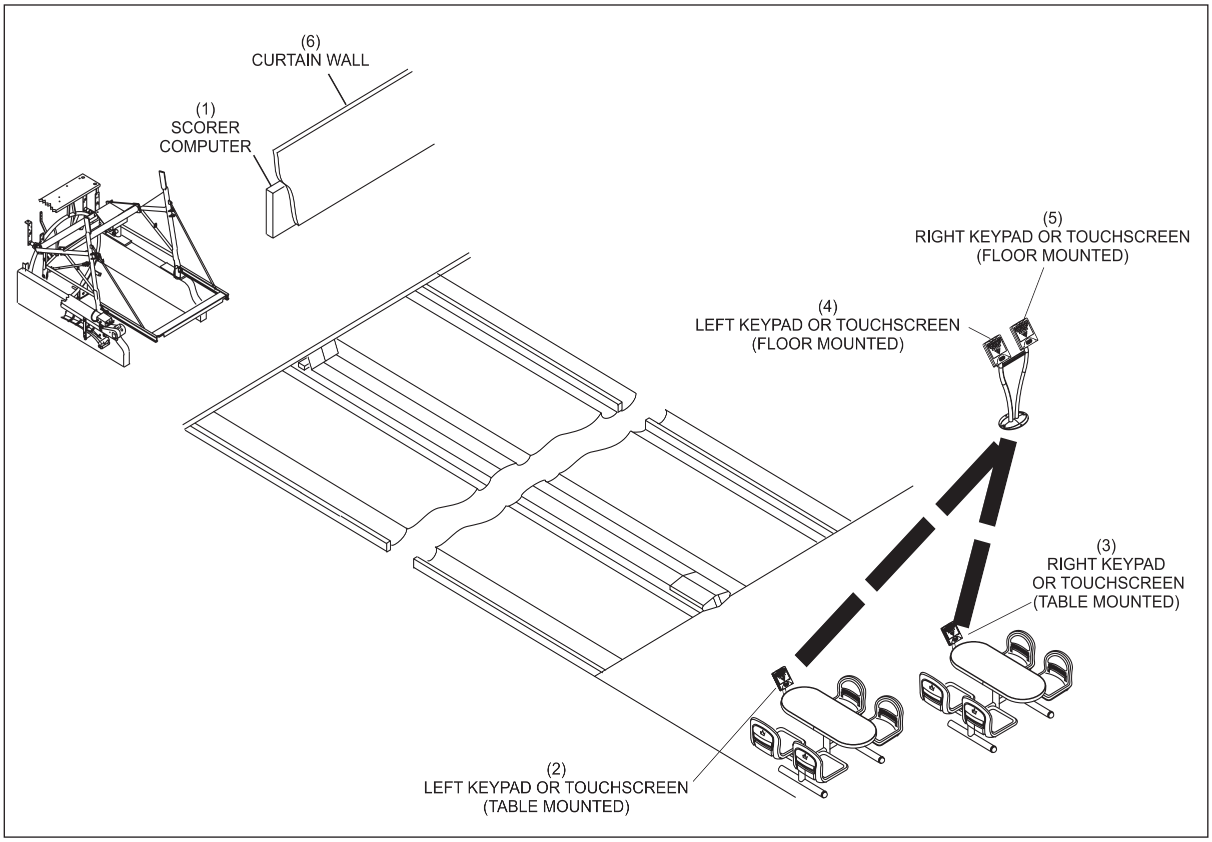
Scorer Computer - Computer(s) located at the curtain wall that control the scoring functions for a up to 8 lanes.

Secondary Patch Panel - An optional circuit board mounted on the right side wall of the Scorer Computer that provides connections and surge protection for the lower LCD video. The Secondary Patch Panel has connections for up to 8 monitor. This board is only installed when low LCD monitors are used.

Serial Communication - A popular means of transmitting data between a computer and another device. In the Vector system two types of serial communication are used; RS-232 and RS-485. Also refer to RS-232 and RS-485.

VECTOR SCORER OVERVIEW

Two configurations are available in the Vector-HD scoring system; Keypad or LCD Touchscreens (Flatscreens). For the Keypad configuration two identical keypads are used for each lane pair. These keypads are full-function keyboards that allow the bowler to enter all information needed to begin bowling and change or correct information once bowling has begun. Entry options include names, score correction, language selection, and other special features. A Scorer Computer mounted on the curtain wall contains the electronics that control scoring and other functions. The scoring computer can control the functions for up to 8 lanes. Refer to figure titled *Vector Configurations*


(6)
CURTAIN WALL
(1)
SCORER
COMPUTER
(5)
RIGHT KEYPAD OR TOUCHSCREEN
(FLOOR MOUNTED)
(4)
LEFT KEYPAD OR TOUCHSCREEN
(FLOOR MOUNTED)
(3)
RIGHT KEYPAD
OR TOUCHSCREEN
(TABLE MOUNTED)
(2)
LEFT KEYPAD OR TOUCHSCREEN
(TABLE MOUNTED)

Vector Configurations

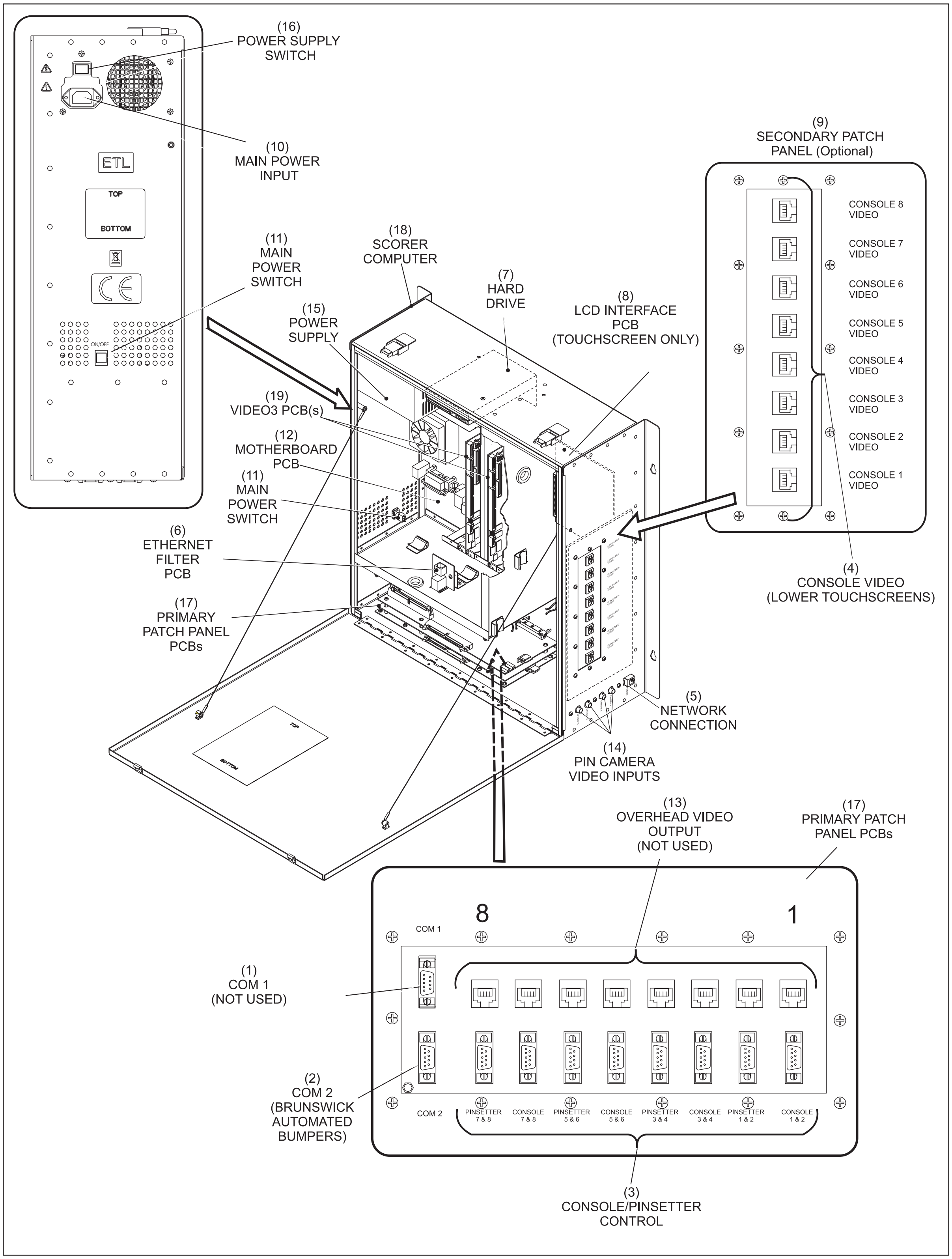
(1) SCORER COMPUTER
(2) LEFT KEYPAD OR TOUCHSCREEN (TABLE MOUNTED)
(3) RIGHT KEYPAD OR TOUCHSCREEN (TABLE MOUNTED)
(4) LEFT KEYPAD OR TOUCHSCREEN (FLOOR MOUNTED)
(5) RIGHT KEYPAD OR TOUCHSCREEN (FLOOR MOUNTED)
(6) CURTAIN WALL

Scorer Computer

The scorer computer(s) located at the curtain wall control scoring functions for up to 8 lanes. The number and type of printed circuit boards (PCBs) housed inside the Scoring Computer depends on whether the center has lower LCD Touchscreens or Keypads, the model of motherboard installed in the scorer computer, and the version of the scorer computer.

All Scorer Computers includes a Motherboard, a Video3 PCB, and a pair of boards that make up the Primary Patch Panel. When lower LCD touchscreens are installed, a second Video3 PCB, an LCD Interface PCB and a Secondary Patch Panel, are added to the computer to provide video for the lower screens.

Additional components used in all configurations include a power supply and a hard disk drive. Refer to the figure titled *Scorer Computer for Vector-HD* (on following page).


(16) POWER SUPPLY SWITCH
(10) MAIN POWER INPUT
ETL
TOP
BOTTOM
ON/OFF
(9) SECONDARY PATCH PANEL (Optional)
CONSOLE 8 VIDEO
CONSOLE 7 VIDEO
CONSOLE 6 VIDEO
CONSOLE 5 VIDEO
CONSOLE 4 VIDEO
CONSOLE 3 VIDEO
CONSOLE 2 VIDEO
CONSOLE 1 VIDEO
(11) MAIN POWER SWITCH
(18) SCORER COMPUTER
(7) HARD DRIVE
(8) LCD INTERFACE PCB (TOUCHSCREEN ONLY)
(15) POWER SUPPLY
(19) VIDEO3 PCB(s)
(12) MOTHERBOARD PCB
(11) MAIN POWER SWITCH
(6) ETHERNET FILTER PCB
(17) PRIMARY PATCH PANEL PCBs
(4) CONSOLE VIDEO (LOWER TOUCHSCREENS)
(5) NETWORK CONNECTION
(14) PIN CAMERA VIDEO INPUTS
TOP
BOTTOM
(13) OVERHEAD VIDEO OUTPUT (NOT USED)
(17) PRIMARY PATCH PANEL PCBs
8
1
COM 1
(1) COM 1 (NOT USED)
(2) COM 2 (BRUNSWICK AUTOMATED BUMPERS)
COM 2
PINSETTER 7 & 8
CONSOLE 7 & 8
PINSETTER 5 & 6
CONSOLE 5 & 6
PINSETTER 3 & 4
CONSOLE 3 & 4
PINSETTER 1 & 2
CONSOLE 1 & 2
(3) CONSOLE/PINSETTER CONTROL

Scorer Computer For Vector-HD

The function of the circuit boards, components and connections for the Scorer Computer include:

(1) **Com 1 -** Not Used

(2) **Com 2 (Brunswick Automated Bumpers) -** Output used to communicate to Brunswick's optional automated bumper system. The bumpers are "told" to raise or lower through this connection.

(3) **Console/Pinsetter Control -** Connections for console Keypads or Touchscreens and Distribution PCBs or GS Pinsetters for up to 8 lanes. The console connections provide input from the keypads or touchscreens as well as power for keypads. The pinsetter control connections provide communication and power for the Distribution PCBs or communication for GS pinsetters. Refer to *(17) Primary Patch Panel.*

(4) **Console Video (Lower Touchscreens) -** RJ-45 video output connections to the lower flatscreens for up to 8 lanes. Refer to *(9) Secondary Patch Panel (Optional).*

(5) **Network Connection** - The connection point for the 100Base-TX (Cat5) cable from the Ethernet Switch.

(6) **Ethernet Filter PCB** - A circuit board that provides filtering for the Ethernet signal.

(7) **Hard Drive -** The hard drive contains windows operating system and the Vector programming for the Scorer Computer.

(8) **LCD Interface PCB (Touchscreen installations only) -** A circuit board that adapts the scoresheet video so that it can be displayed on the lower flatscreen displays.

(9) **Secondary Patch Panel (Optional) -** An optional circuit board mounted on the inside side wall of the Scorer Computer that provides connections and surge protection for the lower LCD video. The Secondary Patch Panel has either RJ-45 connectors to handle up to 8 lanes Refer to *(4) Console Video (Touchscreen only).*

(10) **Main Power Input -** 120VAC or 240VAC main input power for the Power Supply. Refer to *(20) Voltage Selector* and *(15) Power Supply*.

(11) **Main Power Switch -** Power switch for the Scorer Computer. Pressing this button turns the Scorer Computer On/Off .

(12) **Motherboard -** (Also referred to as the System Board). This circuit board provides memory and processing capability for the scorer computer, interfaces the hard drive, sound circuits for the exciter audio and Ethernet capability. The Video3 PCBs plug into this board.

(13) **Overhead Video Output (Not Used) -** RJ-45 type scorer video connections to the overhead monitors used only for Vector-SD installations to provide standard definition scorer video for up to 8 overhead monitors. The connectors are not used for installations with Vector-HD. Refer to *(17) Primary Patch Panel.*

(14) **Pin Camera Video Inputs -** Connections for the video signal coming from the pin cameras for up to four lane pairs. These connections are not used when on lanes with GS-Series Pinsetters.

(15) **Power Supply -** This assembly provides power to the components inside the Scorer Computer, Distribution PCBs and Vector Keypads. Input to the power supply can be 120 VAC or 240 VAC. Its output is 5 VDC and +/- 12 VDC.

(16) **Power Supply Switch -** Switch for the Power Supply unit. Turning this switch off disables the power supply and removes power from the motherboard.

(17) **Primary Patch Panel PCBs -** A pair of circuits board mounted to the bottom of the Scorer Computer that provides connections and surge protection for the overhead monitor's video and the communication signals for the Keypad/Touchscreen and Distribution PCB/GS Pinsetter. The panel consists of a processor board and a connection board. The connection board has RJ-45 type connectors that provide standard definitions video to the widescreen overhead monitors in for Vector-SD systems. The primary patch panel has connections for 8 lanes. Refer to *(13) Overhead Video* and *(3) Console/Pinsetter Control.*

(18) **Scorer Computer -** Computer(s) located at the curtain wall that control the scoring functions for a up to 8 lanes.

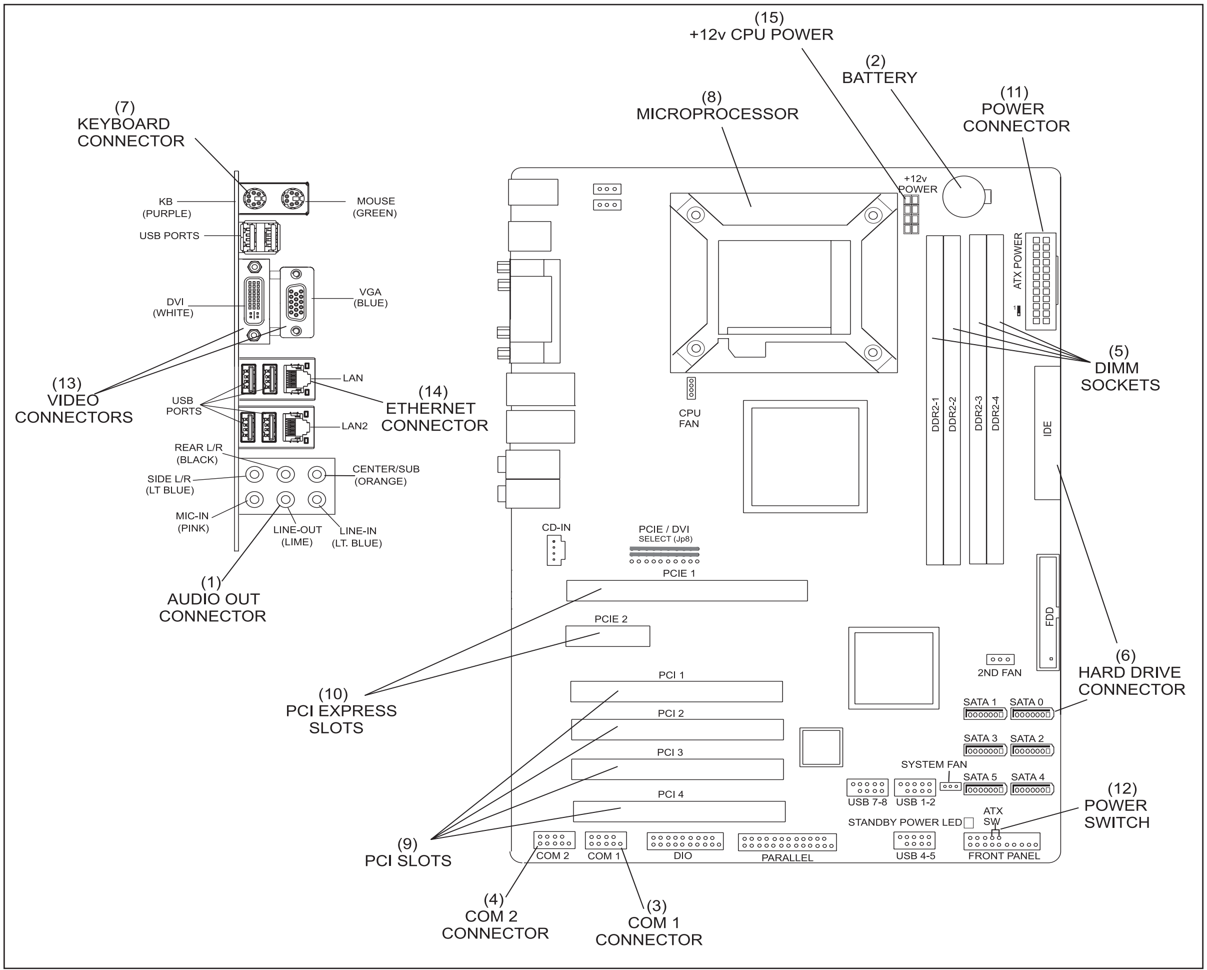
(19) **Video3 PCBs -** This board processes and controls the video for the overhead monitors, processes the video received from the pin cameras, and provides communication for the pinsetters (Distribution PCB) and communication/audio control for the keypads/touchscreens. If touchscreens are installed a second Video3 PCB is used to provide video for the lower screens.

Motherboard

The Vector Scorer Computer uses high performance industrial motherboards as its main PCB. Since January 2012 the ITOX model BL630D equipped with an Intel 2.4GHZ or later processor along with at least 512MB of RAM has been used in the scorer computer.

The motherboard is responsible for processing information, making calculations and supplying power and memory for the boards plugged into its PCI Bus. The board also has integrated circuits that allow it to interface to the Scorer Computer hard drive, process the exciter audio used when the exciter graphics are displayed, and monitor the system's temperature, voltage, and cooling fans.

The onboard video capability is used to configure the motherboard and troubleshoot the scorer computer. Model BL630D also include onboard Ethernet. Refer to the figure titled *Vector Motherboard - ITOX BL630D.*



(15)
+12v CPU POWER
(2)
BATTERY
(11)
POWER
CONNECTOR
(8)
MICROPROCESSOR
(7)
KEYBOARD
CONNECTOR
KB
(PURPLE)
MOUSE
(GREEN)
USB PORTS
DVI
(WHITE)
VGA
(BLUE)
+12v
POWER
ATX POWER
(5)
DIMM
SOCKETS
(13)
VIDEO
CONNECTORS
USB
PORTS
LAN
LAN2
(14)
ETHERNET
CONNECTOR
CPU
FAN
DDR2-1
DDR2-2
DDR2-3
DDR2-4
IDE
REAR L/R
(BLACK)
SIDE L/R
(LT BLUE)
CENTER/SUB
(ORANGE)
MIC-IN
(PINK)
LINE-OUT
(LIME)
LINE-IN
(LT. BLUE)
CD-IN
PCIE / DVI
SELECT (Jp8)
PCIE 1
(1)
AUDIO OUT
CONNECTOR
PCIE 2
FDD
2ND FAN
(6)
HARD DRIVE
CONNECTOR
(10)
PCI EXPRESS
SLOTS
PCI 1
SATA 1
SATA 0
PCI 2
SATA 3
SATA 2
PCI 3
SYSTEM FAN
SATA 5
SATA 4
PCI 4
USB 7-8
USB 1-2
(12)
POWER
SWITCH
STANDBY POWER LED
ATX
SW
(9)
PCI SLOTS
COM 2
COM 1
DIO
PARALLEL
USB 4-5
FRONT PANEL
(4)
COM 2
CONNECTOR
(3)
COM 1
CONNECTOR

Vector Motherboard - ITOX BL630D

The function of the main components on the Motherboard Model BL630D are:

(1) **Audio Out Connector -** Connector to the Primary Patch Panel for the exciter audio. The audio is then routed to the scorer consoles as needed.

(2) **Battery -** Provides battery backup for setup information stored in CMOS memory so that it is retained in case of a power outage.

(3) **Com 1 Connector -** Not Used

(4) **Com 2 Connector -** This connector is used to communicate to optional Brunswick automated bumpers.

(5) **DIMM Sockets (Dual Inline Memory Module) -** Connectors where the RAM is installed.

(6) **Hard Drive Connector -** Connection for the Scorer computer's hard drive. When a SATA (serial interface) hard drive is used, connect the data cable from the SATA drive to the connection labeled *SATA 0*. If a PATA (parallel interface) hard drive is used, connect the blue "System" connector of the data cable attached to the PATA drive to the connection labeled *IDE*.

(7) **Keyboard Connector -** Connection for a standard computer keyboard that can used when configuring the motherboard BIOS or to maintain the Scorer Computer.

(8) **Microprocessor -** The chip responsible for processing of information for the Scorer Computer.

(9) **PCI Slots (Peripheral Component Interconnect Slots) -** This term refers to a group of white connectors located on the motherboard where the other circuit boards plug into. These connectors provide the boards with access to data and memory, the microprocessor, and to each other. The boards also receive power through the connector. For motherboard BL630D, the Video3 pcb(s) plug into these connectors.

(10) **PCI Express Slots -** Not Used

(11) **Power Connector -** Connector for the +5VDC, +12VDC, and -12VDC coming from the power supply.

(12) **Power Switch -** Connection for the push button power switch located on the left side of the Scorer Computer.

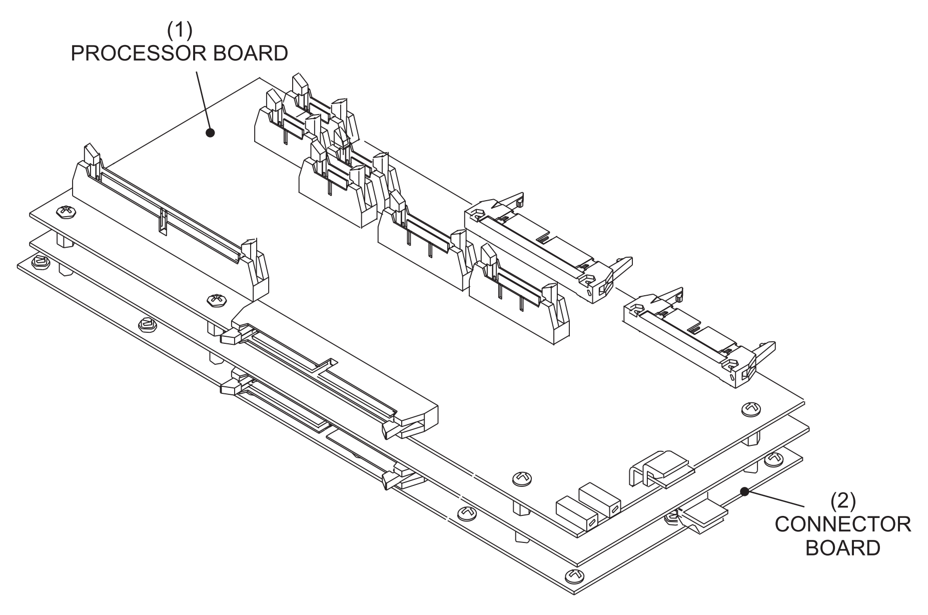
(13) **Video Connectors -** Connection for a standard computer monitor that can be used to set up the motherboard BIOS and to troubleshoot scorer computer problems. Normally the VGA connection is used to connect the monitor but the DVI can be used as an alternative .

(14) **Ethernet Connection -** The 100Base-TX cable from the Network Connector located on the right side of the Scorer Computer attaches to the motherboard at this connector allowing the Scorer Computer to communicate with the control desk system. Although the BL630 motherboard provides two network circuits always use the one closest to the video connectors (LAN 1). Do not use the one closest to the audio connectors (LAN 2).

(15) **+12 CPU Power -** 12V input form the power supply that provides additional current for the processor.

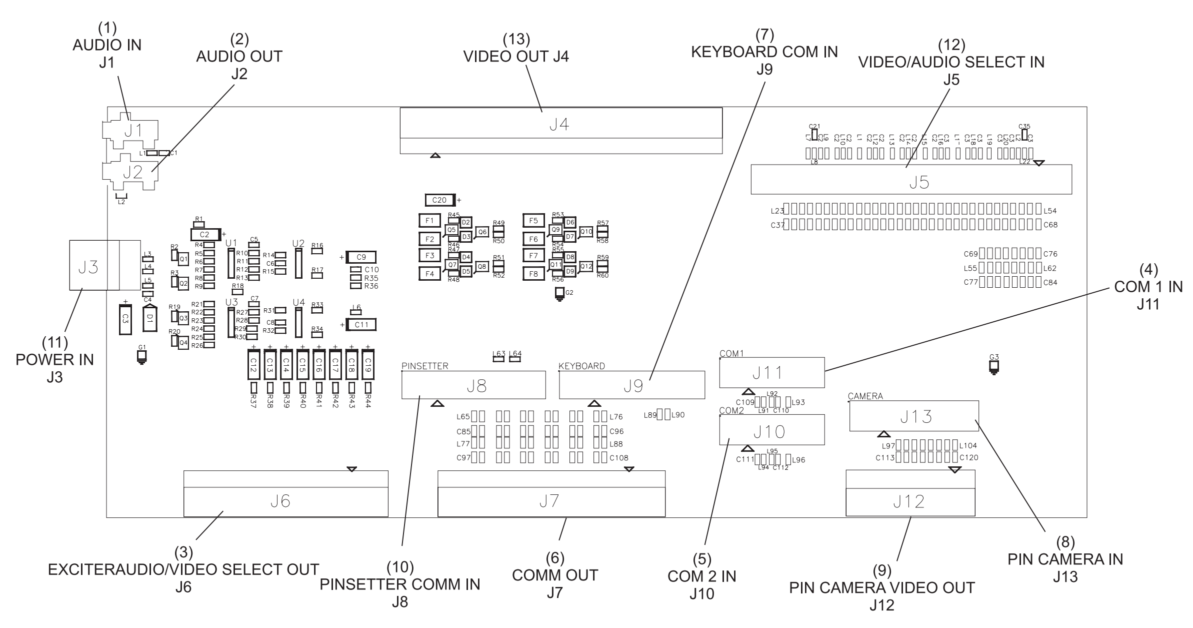
Primary Patch Panel

The Primary Patch consists of two circuit boards. The processor board contains circuits for noise suppression, controlling to which console the exciter audio will be sent, and adapting the video so that it can be sent over Cat5 (Ethernet) cabling. The primary patch panel has connections for 8 lanes. Refer to figures titled *Primary Patch Panel, Primary Patch Panel - Processor Board* and *Primary Patch Panel - Connector Board* .


(1)
PROCESSOR BOARD
(2)
CONNECTOR
BOARD

Primary Patch Panel

(1) PROCESSOR BOARD PCB (2) CONNECTOR PCB


(1)
AUDIO IN
J1
(2)
AUDIO OUT
J2
(13)
VIDEO OUT J4
(7)
KEYBOARD COM IN
J9
(12)
VIDEO/AUDIO SELECT IN
J5
J4
J5
J1
J2
J3
(4)
COM 1 IN
J11
(11)
POWER IN
J3
PINSETTER
J8
KEYBOARD
J9
COM1
J11
CAMERA
J13
COM2
J10
J6
J7
J12
(3)
EXCITERAUDIO/VIDEO SELECT OUT
J6
(10)
PINSETTER COMM IN
J8
(6)
COMM OUT
J7
(5)
COM 2 IN
J10
(9)
PIN CAMERA VIDEO OUT
J12
(8)
PIN CAMERA IN
J13

Primary Patch Panel - Processor Board

The functions of the connectors on the Primary Patch Panel Processor board used in Scorer Computer are:

(1) **Audio In (J1)** - Connection for the exciter audio coming from the motherboard. The board applies the audio signal to one of eight lines leaving the board at J6. Which lane gets the audio is determined by the Video3 PCB.

(2) **Audio Out (J2) -** Not used.

(3) **Exciter Audio / Video Select Out (J6) -** Output for the exciter audio signal that entered the board at J1 and the video select signals that entered the board at J5. These signals route to the connector PCB. The audio is sent to the keypad/touchscreen. The video select signal is used to switch the CRT overheads between scoresheet an TV. *See (1) Audio In (J1) and (12) Video/Audio Select In (J5)*

(4) **COM 1 In (J11) -** Input for the COM1 signal originating at the motherboard. This signal is routed through the processor board along with the other communication signals to J7. Com 1 is currently not used for Vector-HD Scoring. *See (6) Comm Out (J7).*

(5) **COM 2 In (J10) -** Input for the COM 2 signal originating at the motherboard. This signal is routed through the processor board along with the other communication signals to J7. Com 2 is used to control Brunswick automatic bumper systems. *See (6) Comm Out (J7).*

(6) **Comm Out (J7) -** Output connection for the communication signals that entered the board at the Com1 (J11), Com2 (J10), Keyboard (J9) and Pinsetter (J8) connections. These signals are cabled to J22 of the patch panel connector board. *See (4) Com 1 In (J11), (5) Com 2 In (J10), (10) Pinsetter Comm In (J8), (7) Keyboard Comm In (J9).*

(7) **Keyboard Comm In (J9) -** Input for the communication signals originating at the Video3 that used to “talk” to the console keyboards (or touchscreens). The signals are routed through the processor board along with the other communication signals to J7. *See (6) Comm Out (J7).*

(8) **Pin Camera Video In (J13) -** Not used.

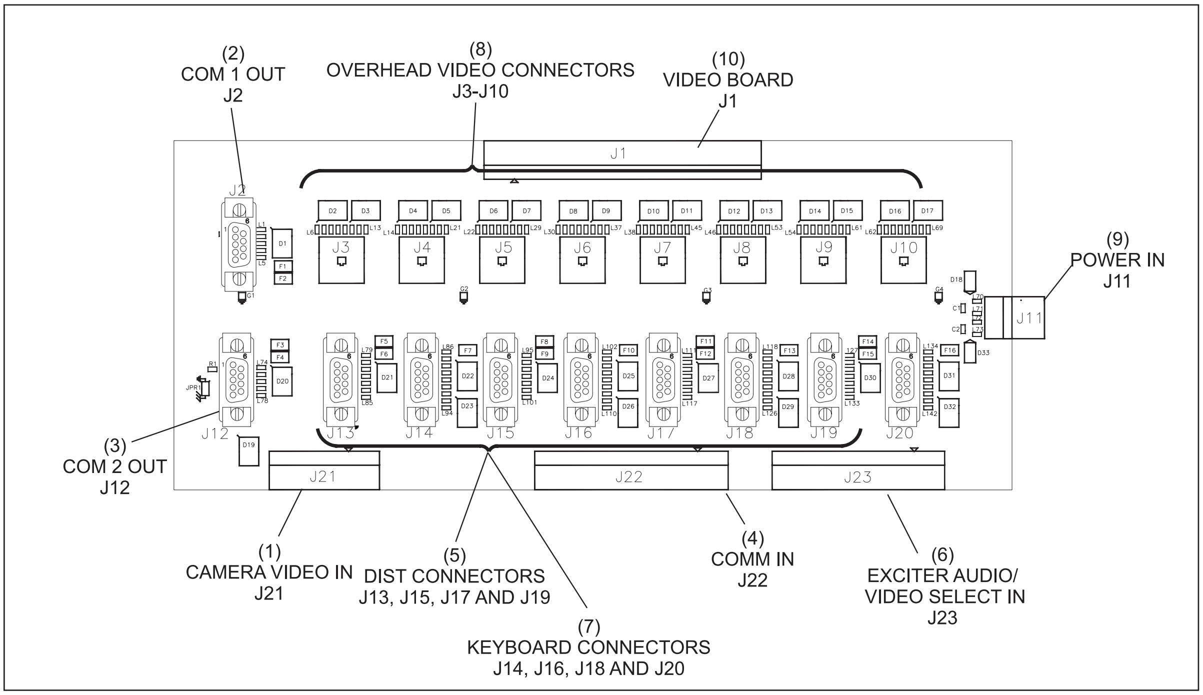
(9) **Pin Camera Video Out (J12) -** Not used.

(10) **Pinsetter Comm In (J8) -** Connection for the communication signals originating at the Video3 that are used to “talk” to the distribution PCB or GS pinsetters. The signals are routed through the processor board along with the other communication signals to J7. *See (6) Comm Out (J7).*

(11) **Power In (J3) -** +12VDC power input for the board. Although the power supply unit provides both +12VDC and +5VDC, only the +12VDC is used.

(12) **Video/Audio Select In (J5) -** Connection for the standard definition video signals and exciter audio selection signals originating at the Video3 PCB. The video signals are routed to the Video Out connection (J4). The exciter audio selection signals are used by the board to determine which lane gets the exciter sound. This signals going into this connection are currently not used for Vector-HD Scoring. Refer to *(11) Video Out (J4) and (3) Exciter Audio/Video Select Out (J6).*

(13) **Video Out (J4) -** Connections for the standard definition scoresheet video and the TV/ Scoresheet select signal for the upper CRT monitors. The signals are routed to J1 of the patch panel connector board. This signals leaving this connection are currently not used for Vector-HD Scoring. *See (10) Video/Audio Select In (J5).*


(2)
COM 1 OUT
J2
(8)
OVERHEAD VIDEO CONNECTORS
J3-J10
(10)
VIDEO BOARD
J1
(9)
POWER IN
J11
(3)
COM 2 OUT
J12
(1)
CAMERA VIDEO IN
J21
(5)
DIST CONNECTORS
J13, J15, J17 AND J19
(7)
KEYBOARD CONNECTORS
J14, J16, J18 AND J20
(4)
COMM IN
J22
(6)
EXCITER AUDIO/
VIDEO SELECT IN
J23
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
J16
J17
J18
J19
J20
J21
J22
J23

Primary Patch Panel - Connector Board

The functions of the connectors on the Primary Patch Panel Connector board used in Scorer Computer are:

(1) **Camera Video In (J21) -** Not Used

(2) **COM 1 Out (J2) -** Not Used

(3) **COM 2 Out (J12) -** Output used to communicate to the optional Brunswick automated bumper system. The bumpers are "told" to raise or lower through this connection.

(4) **Comm In (J22) -** Connection for the communication signals coming from J7 of the Primary Patch Panel Processor board. The communication signals are routed to the DIST connectors (J13, J15, J17, J19), Keyboard connectors (J14, J16, J18, J20), Com2 (J2) and Com2 (J12) as appropriate.

(5) **DIST Connectors (J13, J15, J17,J19) -** Connection for communication and power to the Distribution PCB located in the camera assembly. When GS pinsetters are installed these connections are used to communication with the GS Pinsetter electronics.

(6) **Exciter Audio / Video Select In (J23) -** Connection for the exciter audio and video select signals coming from J6 of the processor board. The sound is routed to the keyboard connectors J14, J16, J18, and J20.

(7) **Keyboard Connectors (J14, J16, J18, J20) -** Connections used to communicate to the Keypad/ Touchcreen and provide exciter audio to the lower Keypads or Touchscreens. Power for keypads are also supplied through this connection.

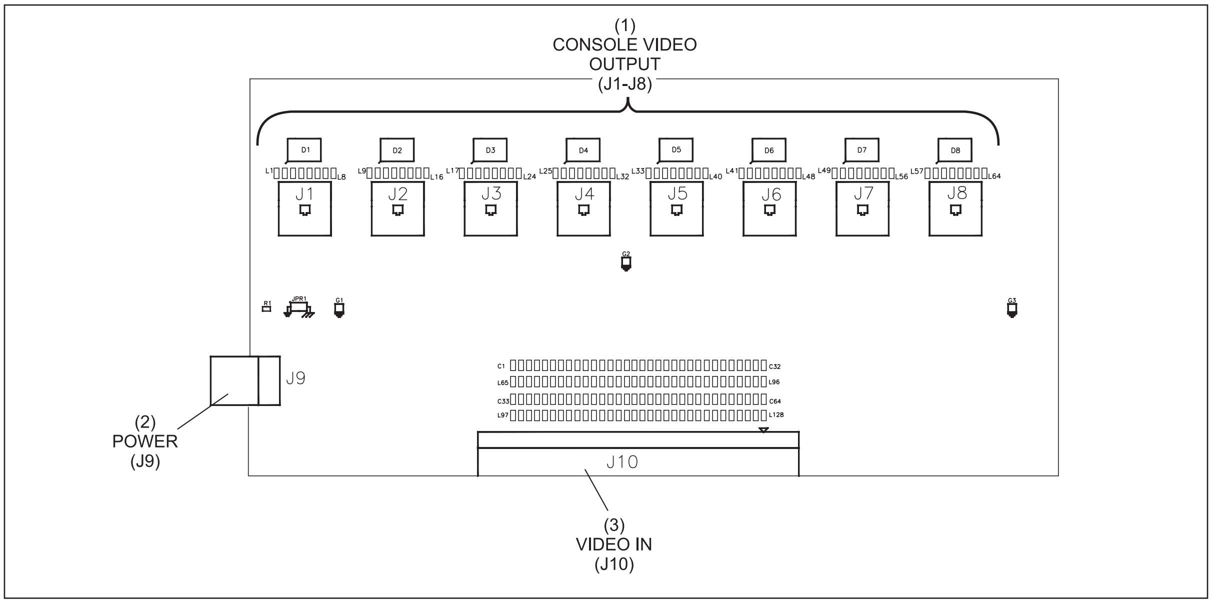
(8) **Overhead Video Connectors (J3-J10) -** These RJ-45 connections provide standard definition scoresheet video for up to 8 overhead monitors. These connections are not used with Vector-HD.

(9) Power In (J11) - Power input for the Board. The power supply unit provides +12VDC and +5VDC to the board through this connection.

(10) Video Board (J1) - Input connection used to receive the standard definition video signals generated by the Video3 PCB. These signals are then routed to the Overhead output connectors to be used for Vector-SD. Refer to *(8) Overhead Video Connectors (J3-J10)*

Secondary Patch Panel

The Secondary Patch panel provides connections and surge protection for the lower LCD touchscreen's video. The secondary patch panel has connections for 8 lanes. This board is also referred to as the LCD Patch Panel. Refer to figure titled *Secondary Patch Panel.*


(1)
CONSOLE VIDEO
OUTPUT
(J1-J8)
D1
D2
D3
D4
D5
D6
D7
D8
L1 L8
L9 L16
L17 L24
L25 L32
L33 L40
L41 L48
L49 L56
L57 L64
J1
J2
J3
J4
J5
J6
J7
J8
G2
R1
JPR1
G1
G3
C1 C32
L65 L96
C33 C64
L97 L128
J9
J10
(2)
POWER
(J9)
(3)
VIDEO IN
(J10)

Secondary Patch Panel

The function of the connectors on the secondary patch panel are:

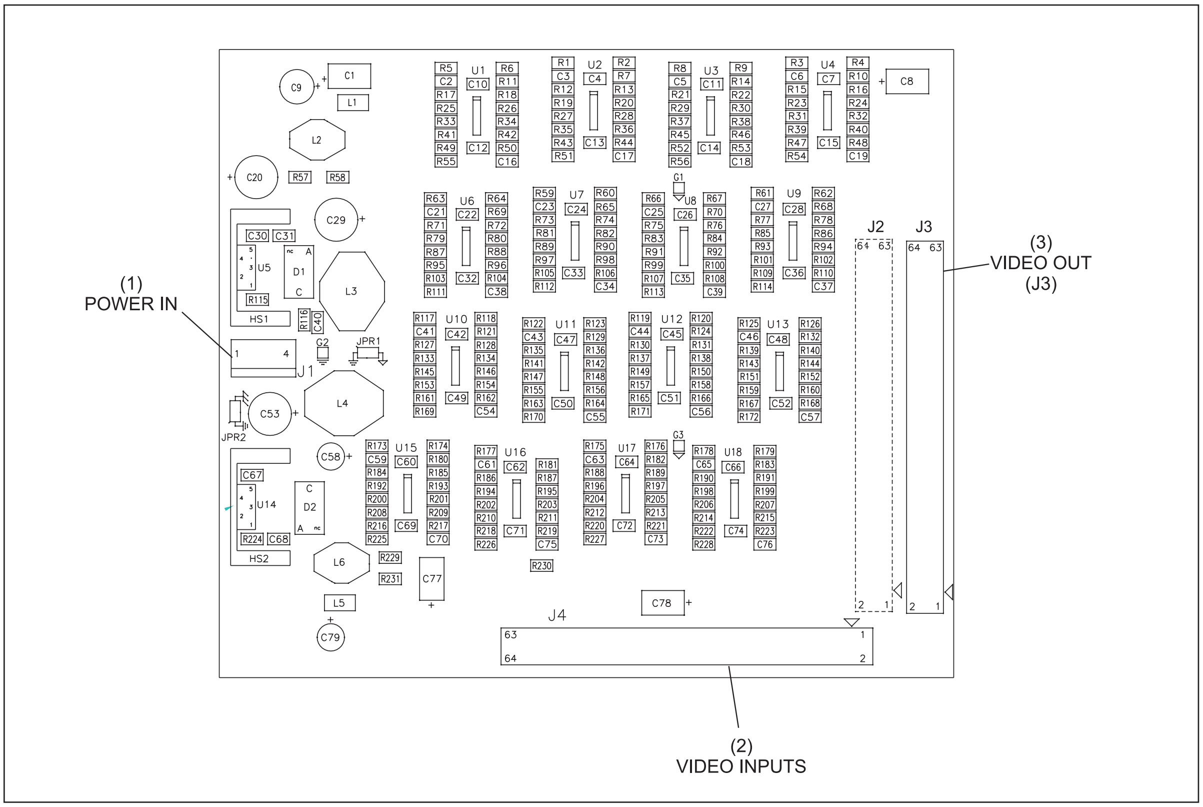
(1) Console Video Output (J1-J8) - Connection for the scoresheet video signal to the lower LCD screens.

(2) Power In (J9) - Power input for the Secondary Patch panel. Although the power supply unit provides and input of +12VDC and +5VDC, the board only uses the connector to provide a ground signals for the protection circuits.

(3) Video In (J10) - Input connection for the console video signals coming from J3 of the LCD Interface PCB. These signals are then routed to the console output connectors. Refer to *(1) Console Video Output (J1 - J8)*

LCD Interface PCB

The LCD Interface PCB is used to adapt the video for the lower screens so that it can be displayed properly on the LCD flatscreens. The board receives 8 lanes of RGBS video from a Video3 PCB and converts the video intended for the lower LCD Screens. The signals for all eight lanes are converted and transferred to the Secondary Patch Panel through connector J3. Refer to figure titled *LCD Interface PCB*.



LCD Interface PCB

The functions of the connectors on the LCD Interface PCB are:

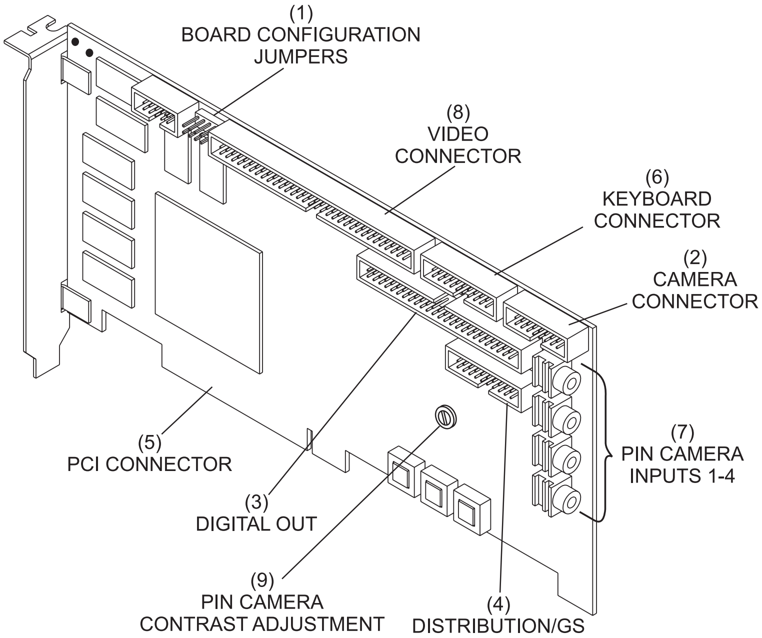
(1) **Power In (J1) -** Connection for the incoming +12DC coming from the power supply unit.

(2) **Video Inputs (J4) -** Input connection for 8 lanes of scorer video received from the Video3 PCB.

(3) **Video Out (J3) -** Video output for 8 lanes of converted video for the Secondary Patch Panel. This connection is only present when the board is used in an 8 lane scorer computer.

Video 3 PCB

The Video3 PCB is a multifunction board. It provides standard definition video for the overhead monitors (Vector-SD only), processes the video received from the pin cameras, provides communication to the Distribution PCBs or GS pinsetters as needed, and provides communication and exciter audio control for the scoring consoles. If flatscreens are installed a second Video3 PCB used to process the video the lower screens. Refer to figure titled *Video3 PCB.*


(1)
BOARD CONFIGURATION
JUMPERS
(8)
VIDEO
CONNECTOR
(6)
KEYBOARD
CONNECTOR
(2)
CAMERA
CONNECTOR
(7)
PIN CAMERA
INPUTS 1-4
(5)
PCI CONNECTOR
(3)
DIGITAL OUT
(9)
PIN CAMERA
CONTRAST ADJUSTMENT
(4)
DISTRIBUTION/GS

Video3 PCB

The function of the connector and components on the Video3 PCB are:

(1) **Board Configuration Jumpers (JP1, JP2, JP3, JP4) -** These jumpers are used to set the board ID and configuration. JP1 and JP2 are used to set the board ID while JP3 and JP 4 are used to set the communication protocol. Set the jumpers as follows:

SETTINGS				
Board	**JP1**	**JP2**	**JP3**	**JP4**
Video3 PCB for Primary Patch Panel	Remove	Remove	Remove	Remove
Video3 PCB for Secondary Patch Panel	Remove	Install	Remove	Remove

(2) **Camera Connector -** Connections for the pin cameras. This connection is not used for the Video3 PCB that is connected to the secondary patch panel. See *(7) Pin Camera Input (1-4).*

(3) **Digital Out -** Not Used.

(4) **Distribution / GS -** Connection that provides RS-232 communication signals for the Distribution board (or GS Pinsetter) This connection is not used for the Video3 PCB that is connected to the secondary patch panel.

(5) **PCI Connector -** Connection to the motherboard.

(6) **Keyboard Connector -** Connection that provides RS-232 communication signals for the keypad (or touchscreen). This connection is not used for the Video3 PCB that is connected to the secondary patch panel.

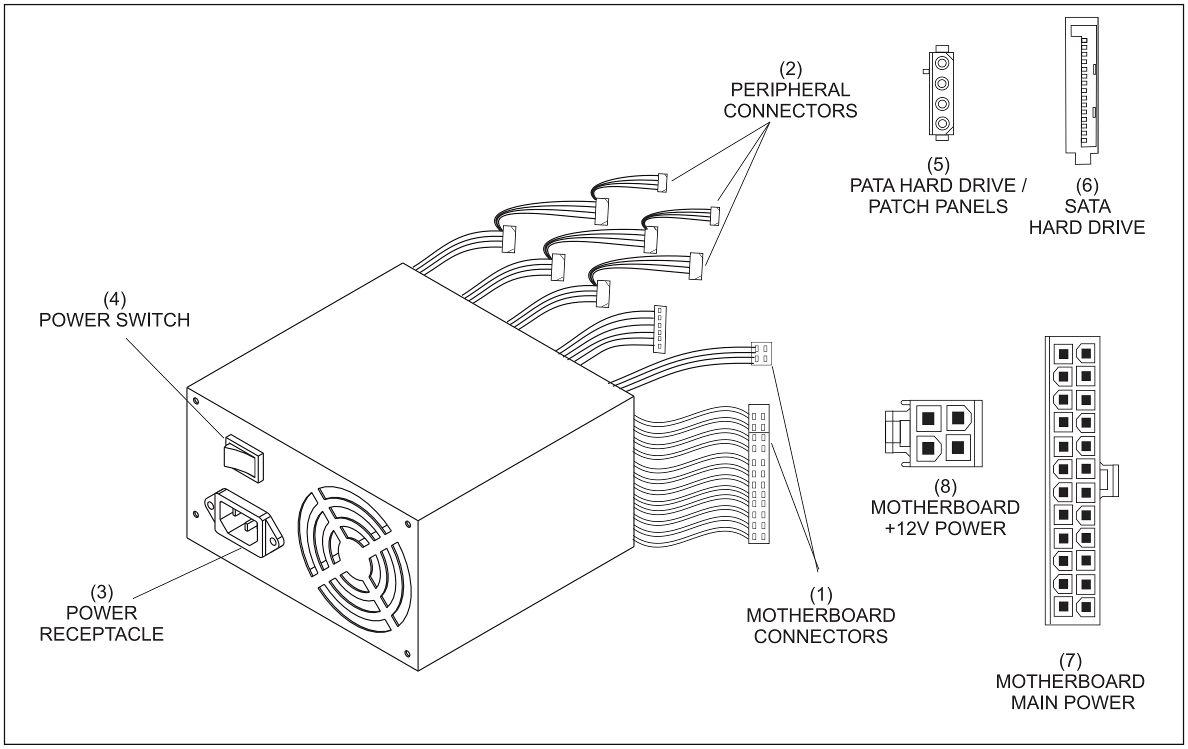
(7) **Pin Camera Input (1-4) -** Not Used. An alternative method for connecting the pin cameras to the board. See *(2) Camera Connector.*

(8) **Video Connector -** This connection provides the standard definition video and exciter audio select signals to the Primary Patch Panel board(s) or lower screen video to the LCD Interface PCB (Video3 PCB #2).

(9) **Pin Camera Contrast Adjustment -** This adjustment controls the contrast level of the video image received from the pin cameras. If the pin image displayed on the pin setting page at the control desk is too bright or too dim, adjust this control as needed to provide a usable image.

Power Supply

The power supply in the Scorer Computer is a professional grade ATX power supply that provides DC voltage to all circuit boards inside the Scorer Computer motherboard, Primary Patch Panel, Secondary Patch Panel, LCD Interface PCB, Video3 PCBs, and hard drive. It also provides power to the Vector keypads and pin camera assemblies if installed. Input to the power supply can be 120 VAC or 240 VAC. The power supply do not have the voltage selection switch as they automatically configure themselves based on the supplied input voltage. The output is +5 VDC and +/-12 VDC. Refer to the figure titled *Power Supply.*


(2)
PERIPHERAL
CONNECTORS
(5)
PATA HARD DRIVE /
PATCH PANELS
(6)
SATA
HARD DRIVE
(4)
POWER SWITCH
(8)
MOTHERBOARD
+12V POWER
(3)
POWER
RECEPTACLE
(1)
MOTHERBOARD
CONNECTORS
(7)
MOTHERBOARD
MAIN POWER

Power Supply

Functions of the components and connectors on the power supply are:

(1) Motherboard Connector - The large 20 +4 connector (7) provides the DC voltage need to run the motherboard and the boards plugged into the PCI Bus. The 4-pin power connectors (8) provides the processor with additional 12DC power. Motherboard model BL630 requires 2 of these connectors or 1, 8-pin connector (not shown).

(2) Power Connectors - Connectors used to supply DC voltage to the SATA hard drive (6) or PATA hard drive (5) and Primary Patch Panel, Secondary Patch Panel, Video3 PCBs, and the LCD Interface PCB (5) as needed.

NOTE: *The power connections are used, as needed, based on what PCBs are located in the scoring computer.*

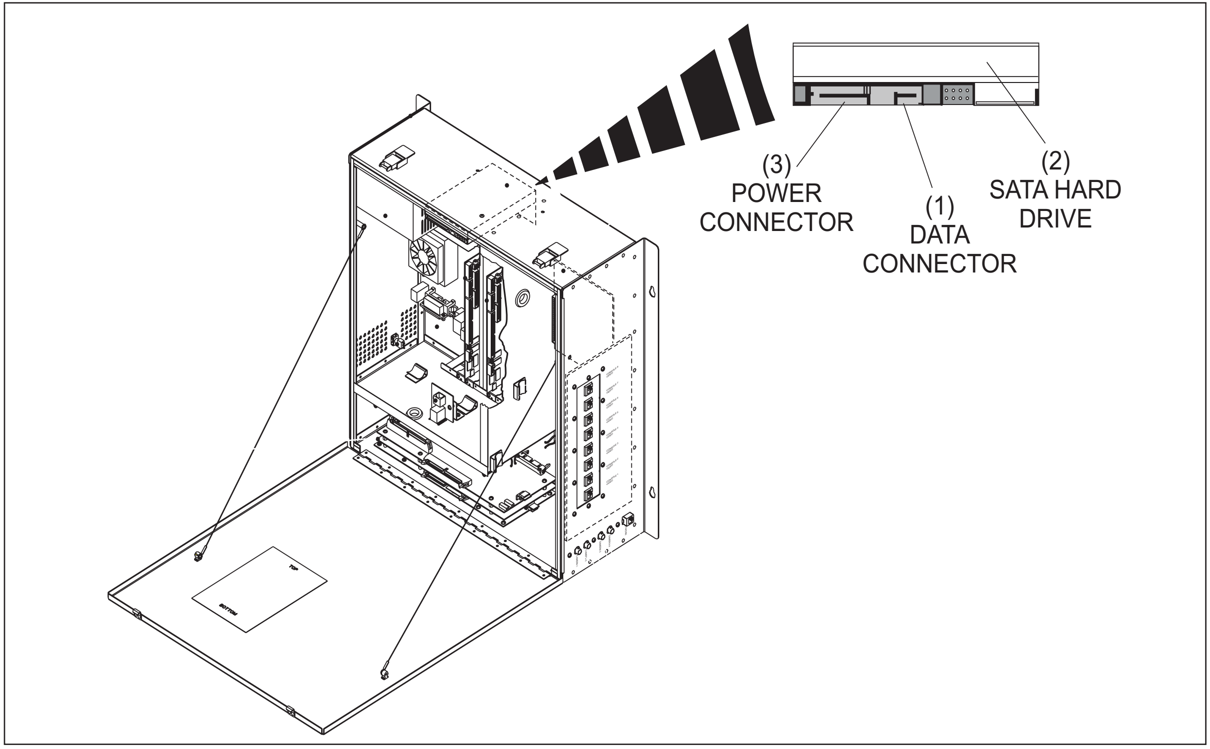
(3) Power Receptacle - Connector for main power into the supply. Remove the cable attached to this receptacle before working inside the scoring computer.

IMPORTANT!: *Before turning the Power Switch to the off position always power down the scorer computer using the main power switch located at the bottom of the side panel.*

Hard Drive

CAUTION! Damage to the hard drive can result if it is subjected to excessive vibration, jarring, or rough handling. Handle with care.

The hard drive located in the Scorer Computer contains a Windows operating system and Brunswick programming to allow scoring for up to 8 lanes. The Brunswick program allows the Scorer Computer to control keypads/ touchscreens and pinsetters, generate video for Overhead monitors and communicate to the desk computer(s). Without the hard disk, the Scorer Computer will not operate and the consoles will not start up. In addition to the programming, the hard drive stores current game information, and contains files that store lane number information to identify what lanes the computer controls, the configuration and calibration settings for the lanes, commercials that can be displayed when the lanes are off, and the exciter graphics and animations that are used during bowling. This information must be updated and configured anytime the hard disk is replaced. For additional information on hard drive replacement refer to the hard drive replacement instructions located at the end of this section. The hard drive is a solid state SATA (Serial interface). Refer to the figure titled *Scorer Computer Hard Drive*.



Scorer Computer Hard Drive

The function of the components on the hard drive are:

(1) **Data Connector -** Connection used to transfer information between the hard drive and the Motherboard. The cable from this connection attaches to SATA0 connection of the Motherboard.

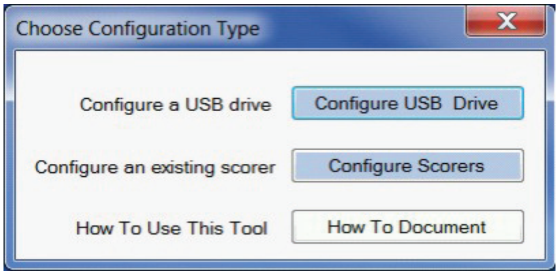
(2) **SATA Hard Drive (**Serial Interface) **-** A solid state device that contains the program for the Scorer Computer.

(3) **Power Connector -** Connection for the DC power cable from the Power Supply.

Backing up the Hard Drive Settings

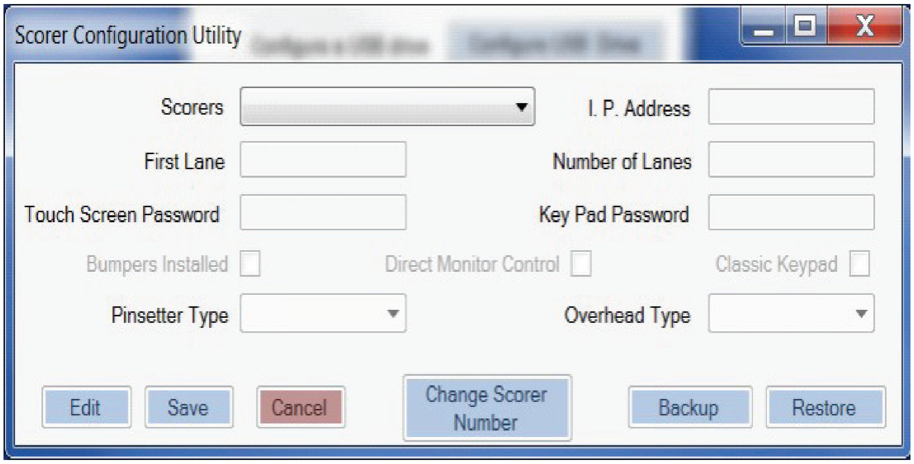
Having a good back-up of the settings of the Scorer Computer's hard drives allows the mechanic to easily restore a drives configuration and quickly get a replacement drive up and running. The back-up and restore functions are available using the Scorer Configuration Utility located on the Vector or Vector Plus SERVER computer.

1. At the Windows desktop screen (the screen with the icons) of the Vector or Vector Plus SERVER computer, double-click on the ScorerConfigurationUtility.exe icon. If the icon is not on the desktop screen the program can be found in the C:\Brunswick\Utilities folder.


Choose Configuration Type
Configure a USB drive
Configure USB Drive
Configure an existing scorer
Configure Scorers
How To Use This Tool
How To Document

Chose Configuration Type screen

2. Select the *Configure Scorers* button


Scorer Configuration Utility
Scorers
I. P. Address
First Lane
Number of Lanes
Touch Screen Password
Key Pad Password
Bumpers Installed ☐
Direct Monitor Control ☐
Classic Keypad ☐
Pinsetter Type
Overhead Type
Edit
Save
Cancel
Change Scorer Number
Backup
Restore

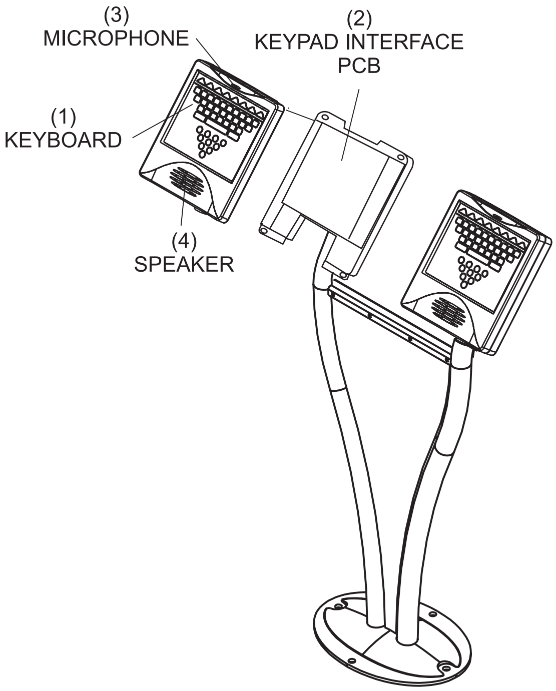
Scorer Configuration Screen

3. Select the desired Scoring Computer from the drop-down list on the top-left of the window. To **backup** a configuration, click "Backup". To **restore** a previously backed up configuration, click "Restore." Refer to the figure titled *Scorer Configuration Screen.*

CONSOLE ELECTRONICS

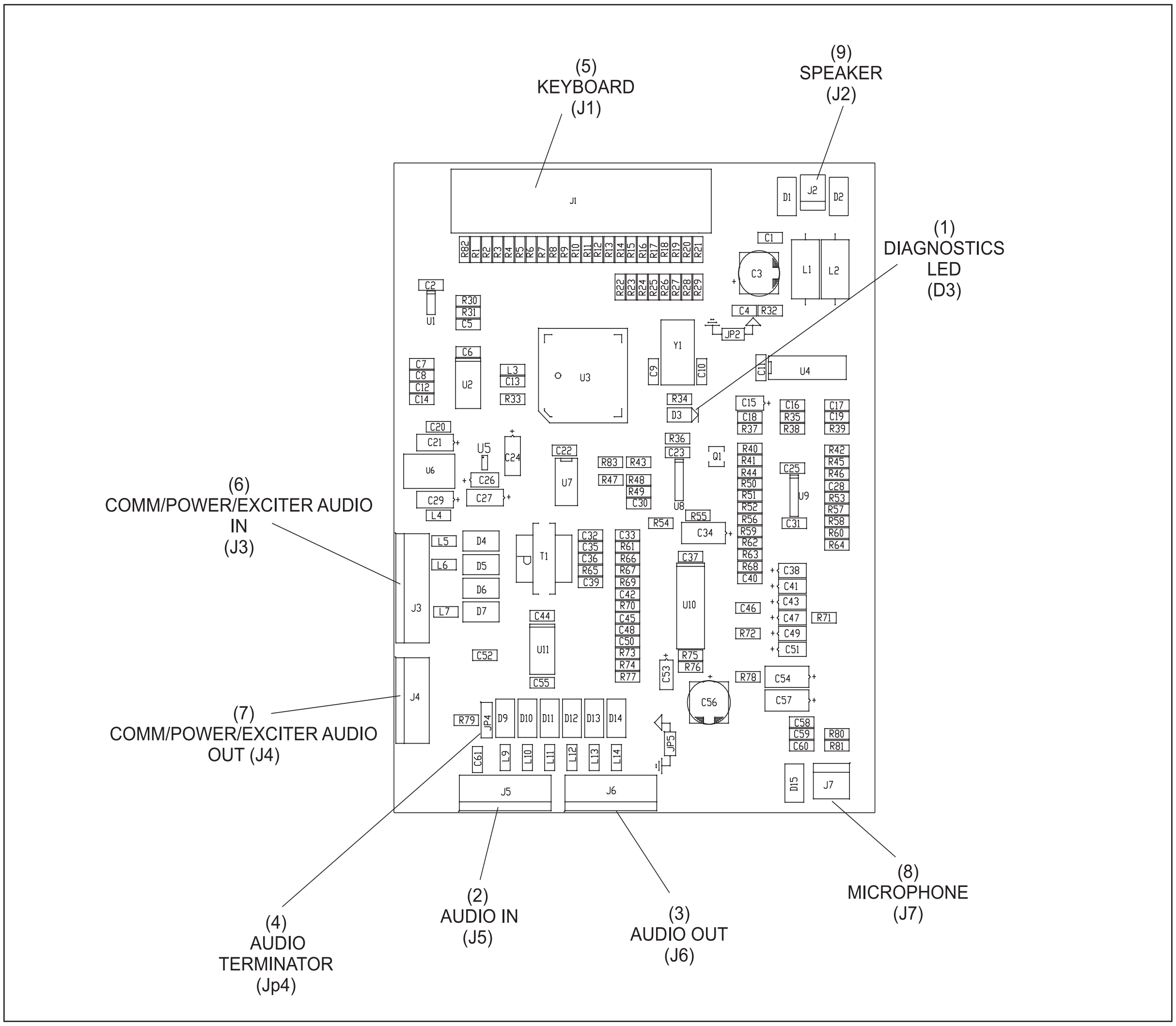
Keypads

To allow for simultaneous entry by the bowlers, keypads are used for each lane. These keypads are identical in every way and contain circuit boards that are interchangeable. The Keypad Interface PCB located in the keypad housing handles the bowler input, sound selection and communication for the console. Refer to the figures titled *Bowler Keypad* and *Keypad Interface PCB*.



Bowler Keypad and Interface PCB

(1) KEYBOARD
(2) KEYPAD INTERFACE PRINTED CIRCUIT BOARD
(3) MICROPHONE
(4) SPEAKER


(5)
KEYBOARD
(J1)
(9)
SPEAKER
(J2)
(1)
DIAGNOSTICS
LED
(D3)
(6)
COMM/POWER/EXCITER AUDIO
IN
(J3)
(7)
COMM/POWER/EXCITER AUDIO
OUT (J4)
(8)
MICROPHONE
(J7)
(2)
AUDIO IN
(J5)
(3)
AUDIO OUT
(J6)
(4)
AUDIO
TERMINATOR
(Jp4)
J1
J2
J3
J4
J5
J6
J7
D3
U3
U4
U10
T1
Y1

Keypad Interface PCB

The function of the connectors and components on the Keypad Interface are:

(1) Diagnostic LED (D3) - This light flashes to indicate that the PCB is functioning.

(2) Audio In (J5) - Input of the intercom audio(s) originating at the control desk audio control box. If the board is located in the first console, the cable comes from the control desk Audio Control box. For the reset of the lanes, the cable comes from the Keypad Interface PCB for the previous lane. Refer to *(3) Audio Out (J6).*

(3) Audio Out (J6) - Output of the intercom audio for the next console. This connection allows the continuation of the intercom audio(s) to the next lane. If the board is installed in the last console and the signals do not continue, they are terminated using the termination jumper JP4. Refer to *(4) Audio Terminator (JP4).*

(4) Audio Terminator (JP4) - Jumper used to terminate the intercom audio signal. If the intercom audio cable does not continue to another console from J6, terminate the signal by placing a jumper between pins 2 and 3 (T). Otherwise place a jumper between pins 1 and 2 (U).

(5) Keyboard (J1) - Connection to the keyboard in the console.

(6) Comm/Power/Exciter Audio In (J3) - Connection for the power, communication and audio exciter signals. When the board is located in left console (odd lane), signals for both the left and right lane coming from the Primary Patch Panel of the Scorer Computer enter the board at J3. If the board is located as the second keypad of the lane pair (even lane), the signals route through the odd lane keypad then to this connector. Refer to *(7) Comm/Power/Exciter Audio Out (J4).*

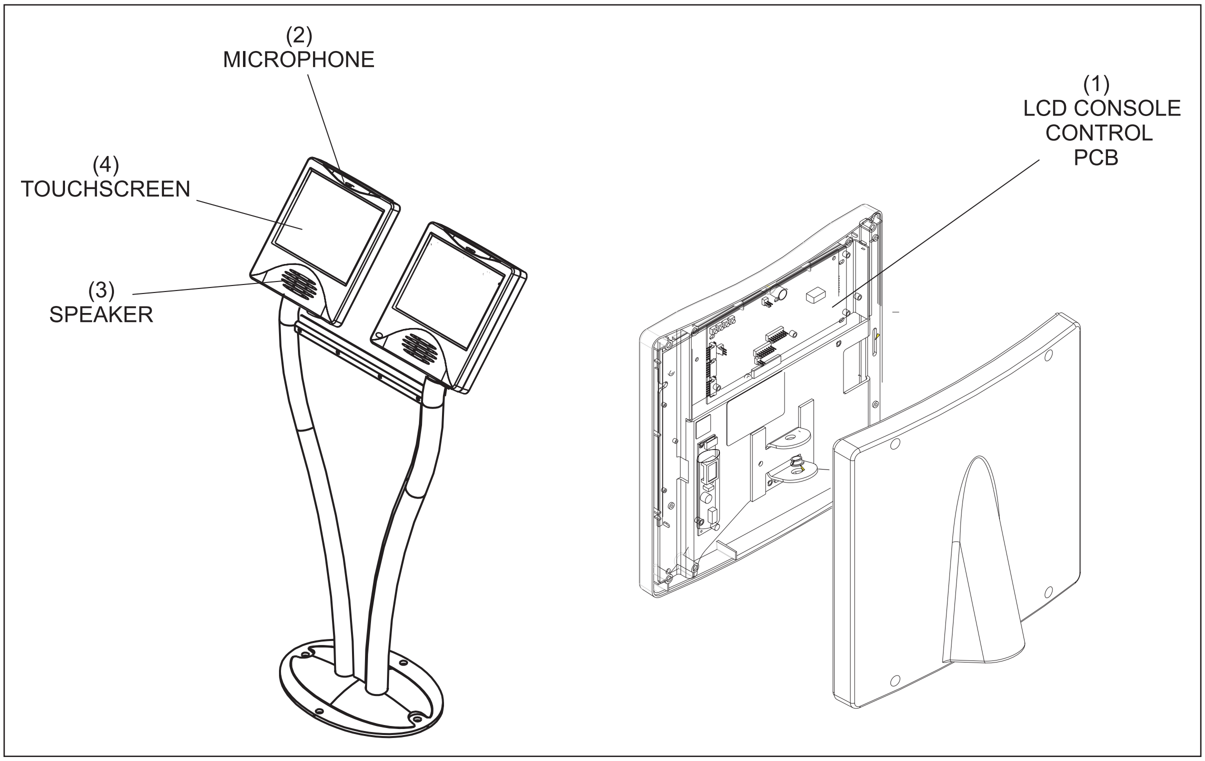
(7) Comm/Power/Exciter Audio Out (J4) - Connection for the communication, power and audio exciter going to the second keypad for the lane pair. This connection is only used on the left (odd) lane keypad.

(8) Microphone (J7) - Connection to the microphone used for the intercom system.

(9) Speaker (J2) - Connection to the speaker. The circuit board applies the selected audio to the speaker through this connection. This audio includes the intercom, exciter audio, and keyboard beep.

Touchscreens (Flatscreens)

The LCD flatscreens provide the bowler with lower scoresheet video and the ability to in input information through a touchscreen. Screens are installed at each lane for the convenience of the bowler. The screens are identical in every way and interchangeable. The only individually replaceable board is the LCD Console Control PCB located in the back of the display housing. This board handles the bowler input, sound selection and communication for the console. Refer to the figure titled *LCD Flatscreens.*



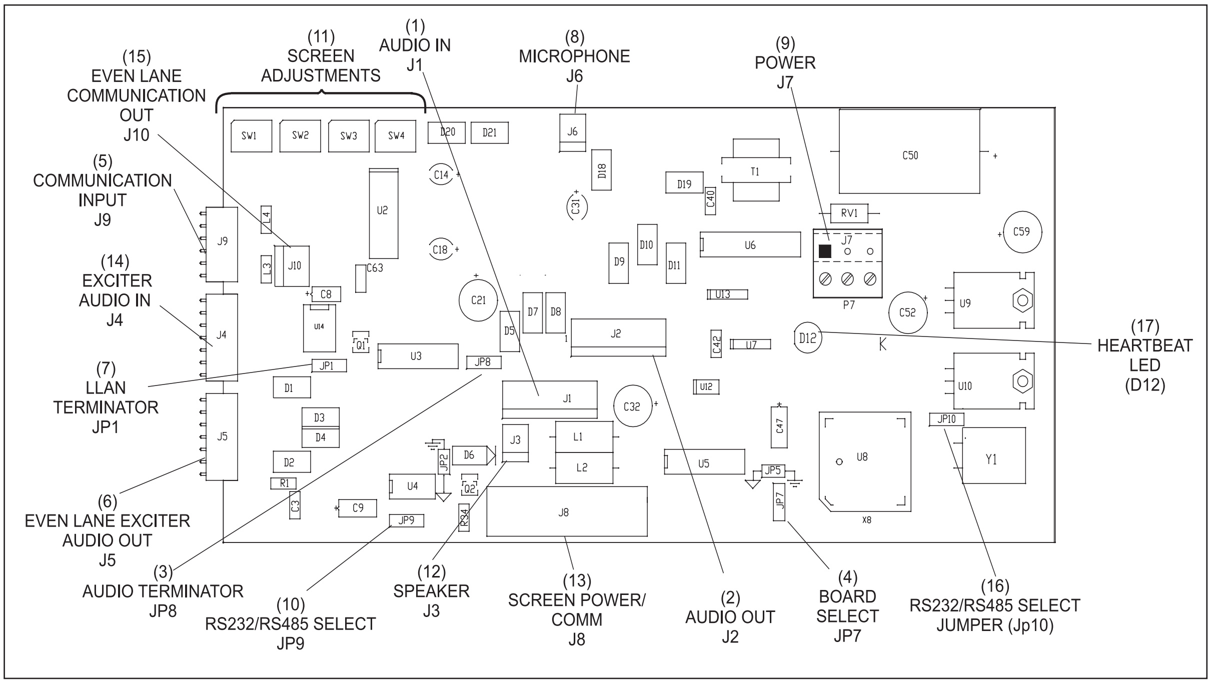
LCD Flatscreens

(1) LCD CONSOLE CONTROL PCB (2) MICROPHONE (3) SPEAKER
(4) TOUCHSCREEN

LCD Console Control PCB

The LCD Console Controller PCB interfaces the flatscreen's touchscreen to the Scorer Computer and the global audio signals to the console.

Jumpers on the board need to be set in order to configure the board for use with the Vector system and to properly terminate the Global Audio Signals Refer to the figure titled *LCD Console Control PCB.*


(15) EVEN LANE COMMUNICATION OUT J10
(11) SCREEN ADJUSTMENTS
(1) AUDIO IN J1
(8) MICROPHONE J6
(9) POWER J7
(5) COMMUNICATION INPUT J9
(14) EXCITER AUDIO IN J4
(7) LLAN TERMINATOR JP1
(6) EVEN LANE EXCITER AUDIO OUT J5
(17) HEARTBEAT LED (D12)
(3) AUDIO TERMINATOR JP8
(10) RS232/RS485 SELECT JP9
(12) SPEAKER J3
(13) SCREEN POWER/ COMM J8
(2) AUDIO OUT J2
(4) BOARD SELECT JP7
(16) RS232/RS485 SELECT JUMPER (Jp10)
SW1
SW2
SW3
SW4
D20
D21
J6
C50
T1
D18
D19
C40
C14
C31
U2
RV1
C59
L4
J9
J10
L3
C18
C63
D10
D9
D11
U6
J7
P7
U13
C8
C21
U14
D7
D8
C52
U9
D5
J2
C42
U7
D12
K
J4
Q1
U3
JP1
JP8
D1
J1
C32
U12
U10
JP10
D3
C47
D4
J5
J3
L1
U8
Y1
D2
JP2
D6
L2
U5
JP5
R1
U4
Q2
C3
C9
JP9
R34
J8
JP7
X8

LCD Console Control PCB

The function of the components and connectors on the LCD Console Control PCB are:

(1) **Audio In (J1) -** Input of the intercom audio(s) originating at the control desk audio control box. If the board is located in the first console, the cable comes from the control desk Audio Control box. For the reset of the lanes, the cable comes from the LCD Console Control PCB of the previous lane. Refer to *Audio Out (J2)*,

(2) **Audio Out (J2) -** Output of the intercom audio to the next console. This connection allows the continuation of the intercom audio(s) to the next lane. If the board is installed in the last console and the signals do not continue, terminate the signal using the termination jumper JP8.

(3) **Audio Terminator (JP8) -** Jumper used to terminate the intercom audio signal. If the audio cable does not continue to another console from J2, terminate the signal by placing a jumper between pins 2 and 3 (T). Otherwise place a jumper between pins 1 and 2 (U).

(4) **Board Select (JP7) -** Jumper used to select whether the console is for the left lane or the right lane when the board is used for the Frameworx scoring system. In the Vector system, the cabling from the Scorer Computer automatically determines left/right designation. For the Vector System always set the jumper on pins 1 and 2 (L).

(5) **Communication Input (J9) -** Connection for the communication (RS-232) originated at the Primary Patch Panel in the Scorer Computer. If the board is located on the right (even) lane, the communication signal is routed through the left (odd) lane board. Refer to *(15) Even Lane Communication Out (J10).*

(6) **Even Lane Exciter Audio Out (J5) -** Connection for the audio exciter going to the even lane touchscreen of the lane pair. Refer to *(14) Exciter Audio In (J4).*

(7) **LLAN Terminator (JP1) -** Jumper used to terminate the communication signal when the board is used with the Frameworx scoring system. For the Vector scoring system always place the jumper between pins 1 and 2 (U).

(8) **Microphone (J6) -** Connection to the microphone used by the intercom system

(9) **Power (J7) -** 25VAC input power for the circuit board enters here. The power originates at the touchscreen transformer located on the curtain wall near the Scorer Computer.

(10) **RS232/RS485 Select (JP9) -** Jumper used to select whether the PCB will use J9 or J4 for the communication input. Because the Vector scoring system uses J9 as the communication input always set the jumper to RS-232.

(11) **Screen Adjustments -** Push-buttons that allow the user to access an on-screen adjustment menu to adjust brightness, contrast, color, image position, and screen brightness (for screens equipped with adjustable backlights).

Reset (SW1) - Use this button to reset all options to factory default settings.

Up (SW2) - Use this button to increase the setting of the selected option or to move up the selection menu.

Down (SW3) - Use this button to decrease the setting of the selected option or to move down the selection menu.

Select (SW4) - Use this button to select an option from the menu or to enter the setting for an option.

(12) **Speaker (J3) -** Connection to the speaker. The circuit board applies the selected audio to the speaker through this connection. This audio includes the VCR audio, intercom, exciter audio, and keyboard beep.

(13) **Screen Power/Comm (J8) -** Connection to the touchscreen circuitry. Power and the push button switch signals are send out this connection.
X/Y coordinates for the touchscreen is received through the connection

(14) **Exciter Audio In (J4) -** Input for the exciter audio originating at the scorer computer. If the board is located on the right (even) lane, the exciter audio signal is first routed through the left (odd) lane board. Refer to *(6) Exciter Audio Output (J5).*

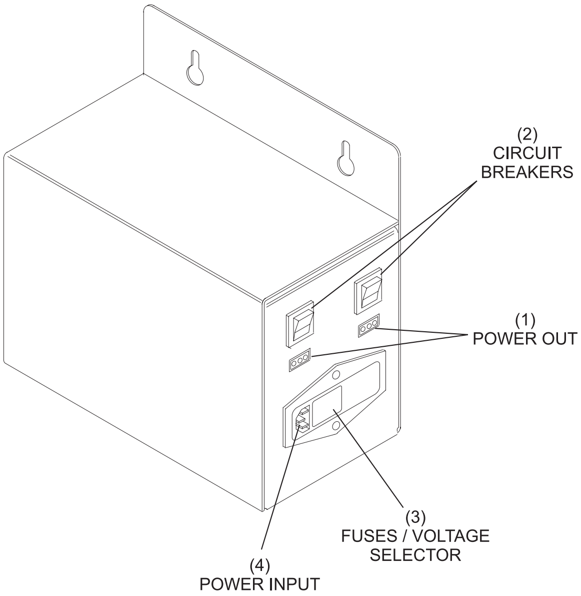
(15) **Even Lane Communication Out (J10) -** Connection for the communication (RS-232) going to the touchscreen for the even lane of the lane pair. Refer to *(5) Communication Input (J9).*

(16) **RS232/485 Select Jumper (JP10) -** Jumper used to configure the PCB for RS232 or RS485 operation. For the Vector scoring system set this jumper to the RS232 position.

(17) **Heartbeat LED (D12) -** Flashes when the PCB is functioning normally.

Touchscreen Transformer

The touchscreen transformer supplies 18 VAC - 25VAC power to the LCD flatscreens. Circuit breakers on the unit protect the screens from power surges. The transformer assembly accepts either 110-120 VAC or 220-240 VAC. Selection of the desired input voltage is done at the input receptacle. Refer to the figure titled *Touchscreen Transformer.*



Touchscreen Transformer

The function of the connectors and components on the touchscreen transformer are:

(1) **Power Out -** 18VAC - 25VAC power out.

(2) **Circuit Breakers -** Manually re-settable circuit breakers that protect the touchscreens from power surges.

(3) **Fuses/Voltage Selector -** Slide out panel which allows the user to select either 110-120 VAC or 220-240 VAC as the input voltage. Fuses protecting the transformer are located here. Refer to *Selecting Input Voltage for Transformers.*

(4) **Power Input** - Main power receptacle. The voltage entering can be 110-120 VAC or 220-240 VAC. Refer to *Fuse/Voltage Selector Chart.*

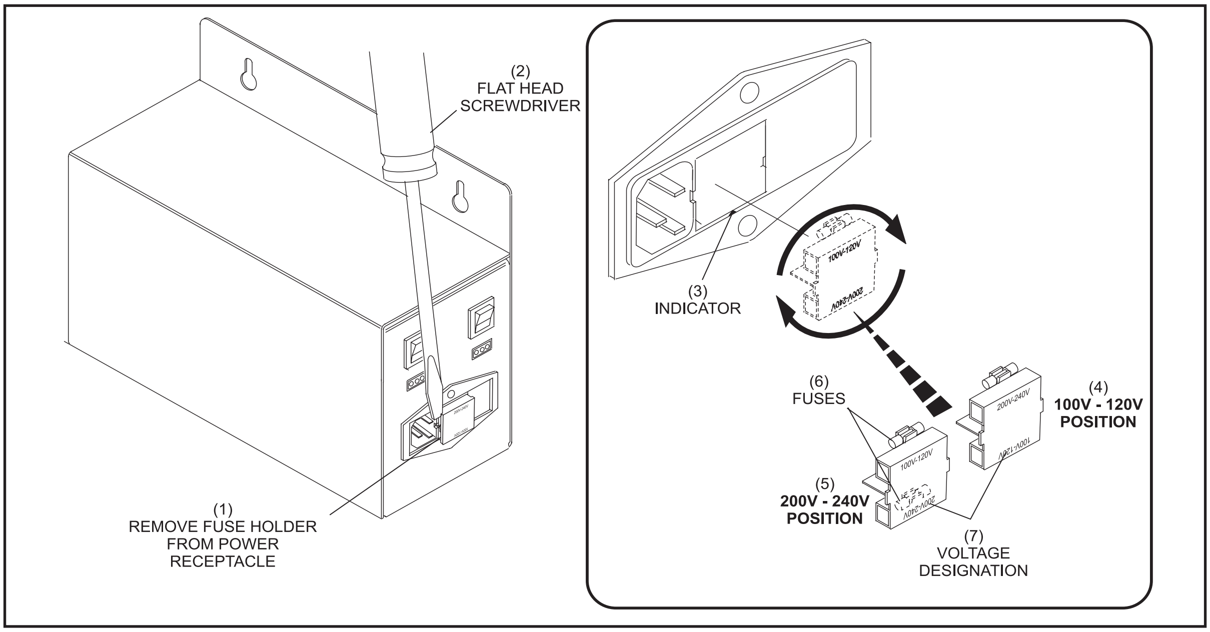
Selecting Input Voltage for the Touchscreen Transformer

***WARNING!* Always remove the power cord prior to working on the Touchscreen Transformer!**

To select the input voltage for the touchscreen transformers, do the following:

1. Disconnect the power cord from the transformer.

2. Using a flat head screwdriver, remove the fuse holder from the power receptacle. Refer to figure titled *Selecting Input Voltage for Transformers.*


(2)
FLAT HEAD
SCREWDRIVER
(3)
INDICATOR
100V-120V
200V-240V
(6)
FUSES
(4)
100V - 120V
POSITION
(5)
200V - 240V
POSITION
(7)
VOLTAGE
DESIGNATION
(1)
REMOVE FUSE HOLDER
FROM POWER
RECEPTACLE

Selecting Input Voltage for Transformers

(1) REMOVE FUSE HOLDER FROM POWER RECEPTACLE
(2) FLAT HEAD SCREWDRIVER
(3) INDICATOR
(4) 100V-120V POSITION
(5) 200V-240V POSITION
(6) FUSES
(7) VOLTAGE DESIGNATION

3. Examine the fuses in the holder to verify the proper fuse rating according to the charts below:

INPUT VOLTAGE	FUSE RATING
110 VAC - 120 VAC	.5 AMP 250V Slo Blow
220 VAC -240 VAC	.25 AMP 250V Slo Blow

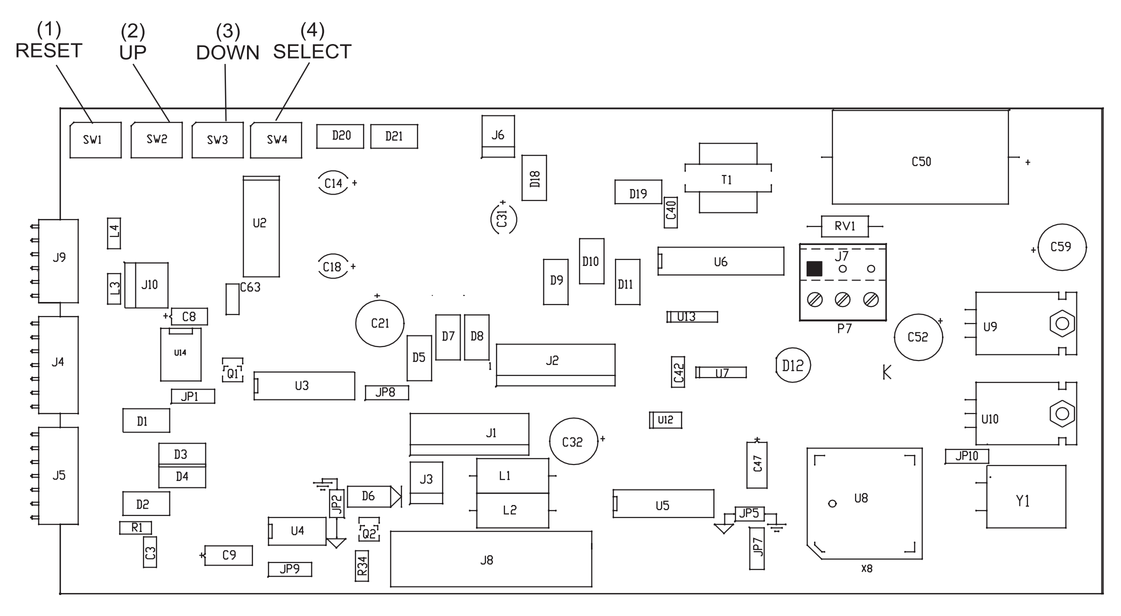
Fuse/Voltage Selector Chart

4. Insert the fuse holder into the power receptacle with the desired voltage designation positioned toward the indicator on the receptacle.

5. Connect the power cord to the transformer.

LCD Touchscreen Adjustment Procedure

Adjustment to the LCD Touchscreen is performed through 4 push-button switches located on the touchscreen controller PCB. These push-buttons allow the user to access an on-screen adjustment menu to adjust brightness, contrast, color, and image position. Refer to figure titled *Touchscreen Adjustment Push- Buttons.*


(1) RESET
(2) UP
(3) DOWN
(4) SELECT
SW1
SW2
SW3
SW4
D20
D21
J6
D18
C14
C31
U2
C18
C63
J9
L4
L3
J10
C8
U14
Q1
JP1
J4
U3
JP8
C21
D5
D7
D8
J2
D9
D10
D11
D19
C40
T1
C50
RV1
J7
P7
U6
U13
C42
U7
D12
C52
C59
U9
U10
K
U12
J1
C32
D1
D3
D4
J5
D2
R1
C3
C9
JP9
U4
JP2
D6
Q2
R34
J3
L1
L2
J8
U5
JP5
JP7
C47
U8
X8
JP10
Y1

Touchscreen Adjustment Push-Buttons

(1) RESET (2) UP (3) DOWN
(4) SELECT

(1) **Reset -** Use this button to reset all options to factory default settings.

(2) **Up -** Use this button to increase the setting of the selected option or to move up the selection menu.

(3) **Down -** Use this button to decrease the setting of the selected option or to move down the selection menu.

(4) **Select -** Use this button to select an option from the menu or to enter the selected setting for an option.

The following procedures list the necessary steps required to adjust the image of the flatscreen monitor.

Basic Adjustments

WARNING! Inverter PCB on rear LCD Touchscreen panel contains high voltage. DO NOT touch inverter PCB when power is on!

1. Remove the four Phillips head screws from the rear cover to gain access to the LCD Console Controller PCB.

2. Turn on power to flatscreen.

3. Press SEL (select) button on Controller PCB. The main menu will appear.

4. Use the UP and DOWN buttons to highlight the Basic Adjustments menu and press SEL.

There are three basic adjustments that can be made in this mode: brightness, contrast, and color balance.

5. Use UP and DOWN buttons to highlight desired adjustment and then press SEL.

6. To change current setting, use UP to increase setting, DOWN to decrease setting. A numerical value is displayed next to the bar graph on the screen and updates automatically during adjustment.

7. Press SEL to enter desired setting.

For example, to change the brightness setting, highlight the Brightness option. Use the UP button to increase brightness or the DOWN button to decrease brightness. Press SEL when finished to enter desired setting and exit this adjustment.

The three basic adjustments are factory-set to the following values but can be changed to preference. The color balance adjustment can be altered for the following colors: red, green, and blue.

Brightness	35
Contrast	50
Color Balance	50 each for red, green, and blue

8. Use UP and DOWN buttons to highlight EXIT option and press SEL to exit the Basic Adjustments menu.

9. Install the rear cover on the touchscreen.

Image Position Adjustment

The imagine position adjustment is used to change the position of the viewable image on the screen.

WARNING! Inverter PCB on rear LCD Touchscreen panel contains high voltage. DO NOT touch inverter PCB when power is on!

1. Remove the four Phillips head screws from the rear cover to gain access to the LCD Console Controller PCB.

2. Turn on power to touchscreen.

3. Press SEL (select) button on Controller PCB. The main menu will appear.

4. Use the UP and DOWN buttons to highlight the Image Position option.

5. There are four position adjustments:

   a. Horizontal Position
   b. Horizontal Size
   c. Vertical Position
   d. Expand/Center
   e. Phase

6. Use the UP and DOWN buttons to highlight the desired adjustment and press SEL.

7. To change current setting, use UP to increase setting or DOWN to decrease setting. A numerical value is displayed next to the bar graph on the screen and updates automatically during the adjustment.

   The following values are factory-set but can be changed to preference.

Horizontal Position	92
Horizontal Size	50
Vertical Position	50
Expand/Center	

8. Once the desired value is displayed, press SEL to enter the setting and exit the adjustment.

NOTE: *After changing the image position settings, it may be necessary to adjust the phase of screen image ONLY if characters are fuzzy or the screen is jittery.*

9. As Needed - Observe screen image and if the screen characters are jittery, perform a phase adjustment as follows:

   a. Using UP and DOWN Push-button, select IMAGE POSITION option.

   b. Under IMAGE POSITION option, highlight PHASE and press SEL.

   c. Use the UP or DOWN arrow keys until image becomes clear (no fuzziness or jittering).

   d. Press SEL to set the phase adjustment.

10. Use UP and DOWN buttons to highlight Exit option and press SEL to exit the program.
11. Install the rear cover on the touchscreen.
12. If the image position has changed, calibrate the touchscreen using the calibration utility located on the configuration screen of the scorer computer.

IMPORTANT: *DO NOT use menu option "Calibrate Touchscreen."*

LCD Touchscreen Cleaning

The LCD touchscreen uses a custom hard coated antiglare polyester touch surface to protect the screen. The surface should be kept free of dirt, dust, finger prints, or other materials that could lower the screen visibility. For best results use a clean, damp, nonabrasive cloth towel and any commercially available window cleaner to regularly clean the surface.

IMPORTANT: *Apply the cleaning solution to the cloth before wiping down the screen. DO NOT spray the solution directly onto the touchscreen.*

CIRCUIT BOARD AND COMPONENT REMOVAL

CAUTION: Some circuits and circuit boards in the Scorer Computer or console may be static sensitive and can be damaged due to improper handling. You should follow the suggested guidelines to avoid problems.

NOTE: *Failure to use proper handling techniques for the circuit board may void the warranty.*

1. Before working on or removing any board you **MUST** discharge any static within your body by touching the metal chassis of the Scorer Computer or console. (If added protection from static electricity is desired, wear a grounded wrist strap).
2. Always keep static sensitive boards and components in their protective wrapping when not in use.
3. Handle the boards by the edges only to avoid damaging the board.
4. Avoid touching the gold plated edge terminals.
5. When handling hard drives, use extra care to ensure that the drive is not dropped or handled roughly. Even slight jarring of the drive could cause damage.

Before replacing any component, you must determine if it requires any initial setup. Refer to the chart titled *Configuration Chart*.

Component	**Setup Required**	**Setup/Comments**
Hard Drive	Yes	1. Set Scorer Computer configuration using the Configuration Menu at the console (Default Password: Keypads = /Vector, Flatscreens = 939393) 2. Download Updated software from the Server Computer. (Scorer Update) 3. Download Commercials. (Scorer Update at Server or Media Manager) 4. Download Multimedia. (Scorer Update at Server or Media Manager) 5. Synchronize the control desk and Scorer Computer information. 6. Calibrate the Camera's (if installed) for all lanes associated with the hard drive using the Pin Settings page at the control Desk 7. Calibrate each touchscreen for lanes associated with the hard drive using using the Configuration Menu at the console. (Default Password: Keypads = /Vector, Flatscreens = 939393) 8. Enable automated bumpers (if installed) using config.exe program at server.
Keypad Interface PCB	Yes	Set the jumper on the board as follows: **JP4** - If the audio cable does not continue to another console from J6, position jumper at pins 2 and 3 (T). If the audio cable continues to another console from J6, position jumper at pins 1 and 2 (U).
LCD Console Controller	Yes	Set the jumpers on the board as follows: **JP1** - Position jumper at pins 1 and 2 (U) **JP7** - Position jumper at pins 1 and 2 (L) **JP8** - If the audio cable does not continue to another console from J2, position jumper at pins 2 and 3 (T). If the audio cable continues to another console from J2, position jumper at pins 1 and 2 (U). **JP9, JP10** - Position jumper at RS232
LCD Interface PCB	No	
Motherboard	No	1. Verify DIMM memory module is present on the motherboard. 2. Verify CPU and CPU Fan are present on the motherboard. 3. Verify proper cable connections
Power Supply	No	Verify the power cables are connected properly to the Motherboard, Hard Drive, Patch Panels, and LCD Interface as needed.
Primary Patch Panel	No	Connect cables as needed. Make sure power cable is connected properly.
Secondary Patch Panel	No	Connect cables as needed. Make sure power cable is connected properly.
Touchscreen Transformer	Yes	Set the Transformer to the appropriate voltage setting and install proper fuses.
Video3 PCB	Yes	- Video3 PCB connected to Primary Patch Panel (Board 1) JP1 - Remove JP2 - Remove JP3 - Remove JP4 - Remove Calibrate cameras at the control desk for non-GS pinsetter installations. (Adjust the brightness control on the bard as needed to obtain a usable camera image on the pin calibration screen. - Video3 PCB connected to LCD Interface PCB / Secondary Patch Panel (Board 2) JP1 - Remove JP2 - Install JP3 - Remove JP4 - Remove 2. Verify ribbon cables are plugged into the correct connectors.

Configuration Chart.

Motherboard Removal

Before removing the Motherboard, the boards that connect to it must be removed. Refer to figure procedure *PCI Bus Board Removal*.

Perform the following steps to remove the Motherboard:

1. Turn off the Scorer Computer using the main power switch located on the side of the chassis and remove the power cord from the power supply.
2. Remove each PCI Bus Board. Refer to procedure titled *PCI Bus Board Removal.* Note the location of each PCB removed.
3. Disconnect the following cables from the motherboard:

    Power switch cable (ATX-SW)
    Exciter Audio cable
    COM1 cable
    COM2 cable
    Hard Drive data cable
    Power supply power cables

5. Remove the screws that hold the Motherboard to the chassis.
6. Place the Motherboard in an antistatic bag or wrapping.

Motherboard Installation

1. Turn off the Scorer Computer using the main power switch located on the side of the chassis and remove the power cord from the power supply.
2. At the Scorer Computer, remove the Motherboard from the antistatic bag or wrapping.
3. Secure the Motherboard to the chassis with the Phillips head screws.
4. If needed, transfer the RAM memory (DIMM chips) from the old Motherboard to the new Motherboard.
5. If needed, transfer the processor chip (CPU) and its fan from the original motherboard to the new motherboard.

NOTE: *If transferring the CPU from the original motherboard to the new motherboard be sure to position the chip properly in the CPU socket and properly connect the CPU fan.*

6. Connect the following cables to the Motherboard:

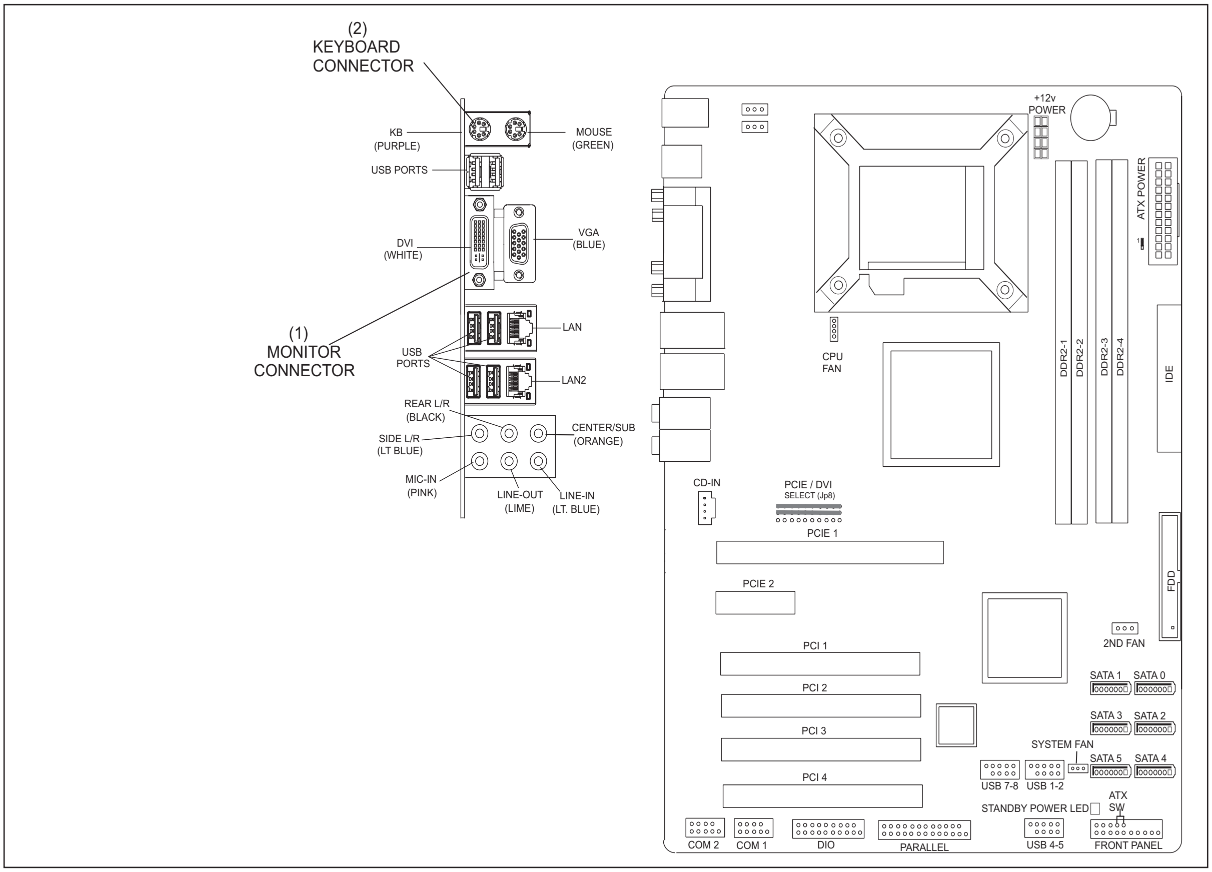
    Power switch cable (ATX SW)
    Exciter Audio cable (Line Out)
    COM 1 cable
    COM 2 cable
    Hard Drive data cable (SATA0)
    24 pin power supply cable (ATX Power)
    4-pin power supply +12V cables (2 each) (12V Power)

7. Install each PCI Bus Board in the same slot from which they were removed and attach the appropriate cable to each. Refer to procedure titled *PCI Bus Board Installation.*

8. Verify that each board and connector is properly installed.

NOTE: *The motherboard bios default configuration is programmed with the proper settings to function with the Vector scoring system. The steps 9-16 are only needed if these factory settings have been changed.*

9. Connect a standard PS-2 style keyboard and VGA monitor to the motherboard as shown below:

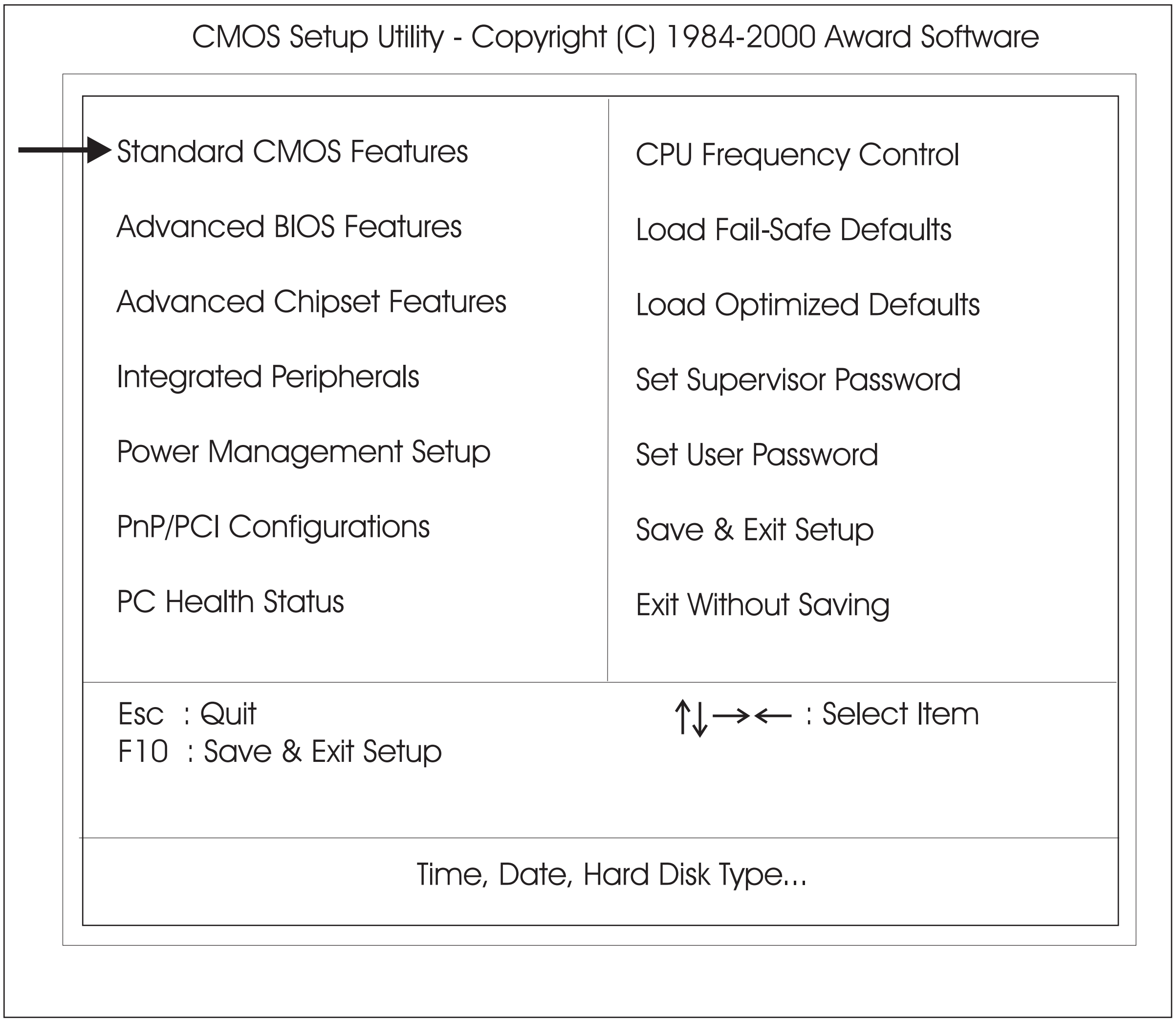

(2)
KEYBOARD
CONNECTOR
KB
(PURPLE)
MOUSE
(GREEN)
USB PORTS
DVI
(WHITE)
VGA
(BLUE)
(1)
MONITOR
CONNECTOR
USB
PORTS
LAN
LAN2
REAR L/R
(BLACK)
SIDE L/R
(LT BLUE)
CENTER/SUB
(ORANGE)
MIC-IN
(PINK)
LINE-OUT
(LIME)
LINE-IN
(LT. BLUE)
+12v
POWER
ATX POWER
1
CPU
FAN
DDR2-1
DDR2-2
DDR2-3
DDR2-4
IDE
CD-IN
PCIE / DVI
SELECT (Jp8)
PCIE 1
PCIE 2
FDD
2ND FAN
PCI 1
PCI 2
PCI 3
PCI 4
SATA 1
SATA 0
SATA 3
SATA 2
SYSTEM FAN
SATA 5
SATA 4
USB 7-8
USB 1-2
ATX
SW
STANDBY POWER LED
COM 2
COM 1
DIO
PARALLEL
USB 4-5
FRONT PANEL

Connecting a Keyboard and Monitor to The Scorer Computer

(1) MONITOR CONNECTION (2) KEYBOARD CONNECTION

10. Connect the power cord to the power supply receptacle and turn the Scoring Computer using the main power switch.

11. Press <Del> to enter the Bios utility. The main menu screen will appear.

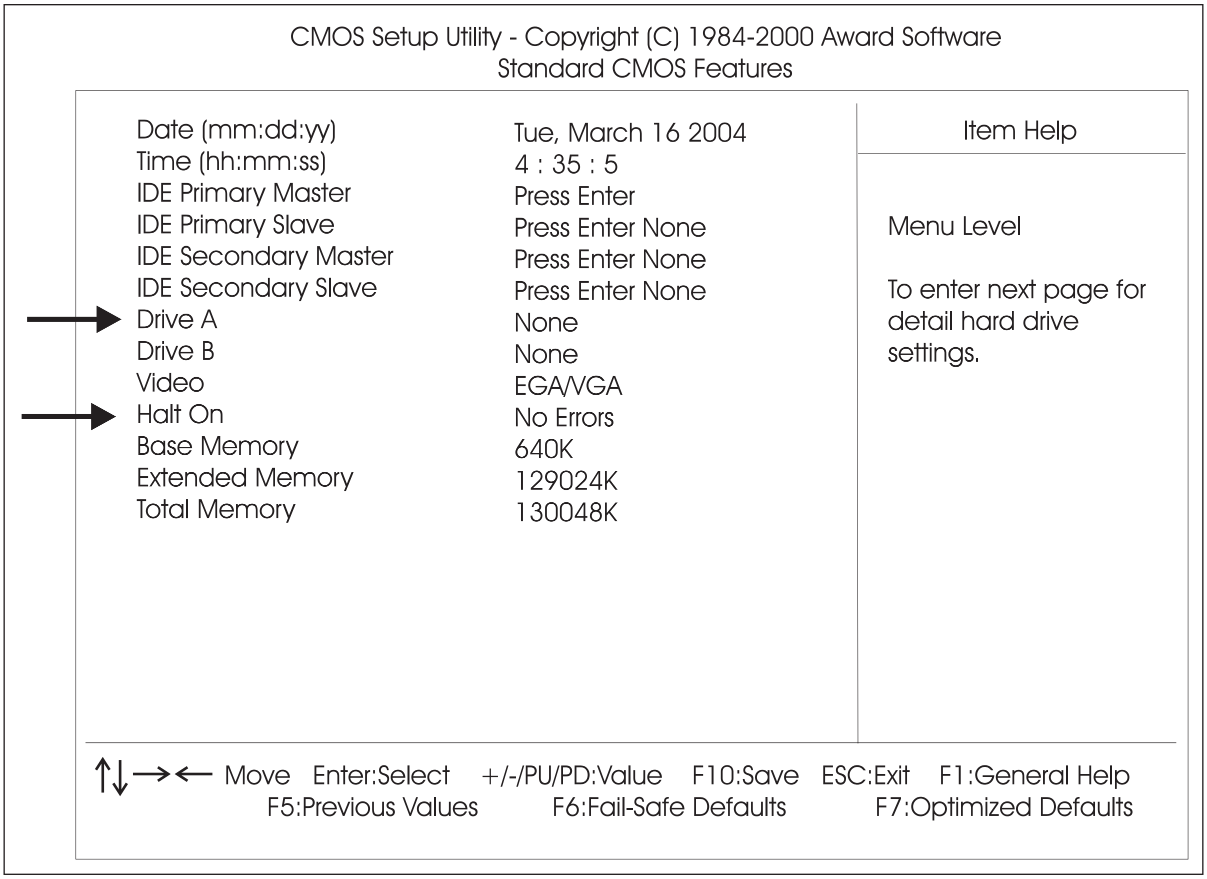

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Standard CMOS Features
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
PC Health Status
CPU Frequency Control
Load Fail-Safe Defaults
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit
F10 : Save & Exit Setup
↑↓→← : Select Item
Time, Date, Hard Disk Type...

Bios - Main Menu Screen

12. On the main menu select *Standard CMOS Features.*

13. Using the arrow, +, -, Page Up, and Page Down keys move the cursor to *Drive A* and press [Enter]. Set Drive A to **None**.

14. Move the cursor to *Halt On* and press [Enter]. Set *Halt On* to **No Errors.**



```
              CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                               Standard CMOS Features

   Date (mm:dd:yy)            Tue, March 16 2004              Item Help
   Time (hh:mm:ss)            4 : 35 : 5
   IDE Primary Master         Press Enter
   IDE Primary Slave          Press Enter None          Menu Level
   IDE Secondary Master       Press Enter None
   IDE Secondary Slave        Press Enter None          To enter next page for
   Drive A                    None                      detail hard drive
   Drive B                    None                      settings.
   Video                      EGA/VGA
   Halt On                    No Errors
   Base Memory                640K
   Extended Memory            129024K
   Total Memory               130048K

 ↑↓→← Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1:General Help
         F5:Previous Values       F6:Fail-Safe Defaults       F7:Optimized Defaults
```

Bios Standard CMOS Features

15. Press [ESC] to return to the Main Bios Screen.

16. Press [F10] to save the selections, leave the bios setup screens, and reboot the Scorer Computer.

PCI Bus Board Removal

The PCI Bus Boards are the boards that connect to the white medium sized connectors of the Motherboard. For Vector-HD only Video3 PCBs use the PCI slots. To remove the PCI Bus Board(s), perform the following steps.

1. Turn off the Scorer Computer using the main power switch located on the side of the chassis and remove the power cord from the power supply.
2. Disconnect any cables that are attached to the board being removed. Label the cables so that you can reconnect them properly.
3. Remove the Phillips head screw that holds the board to the Scorer Computer chassis.
4. Carefully remove the circuit board from the Scorer Computer chassis.
5. Place the circuit board in an antistatic bag or wrapping.

PCI Bus Board Installation

IMPORTANT!: *When replacing some PCI Bus Boards, special setup and configuration procedures may need to be performed. Failure to configure the board properly may result in inoperative lanes. Within this section, refer to the chart titled* Component Setup requirements *for more information.*

To install a PCI Bus Board, perform the following steps:

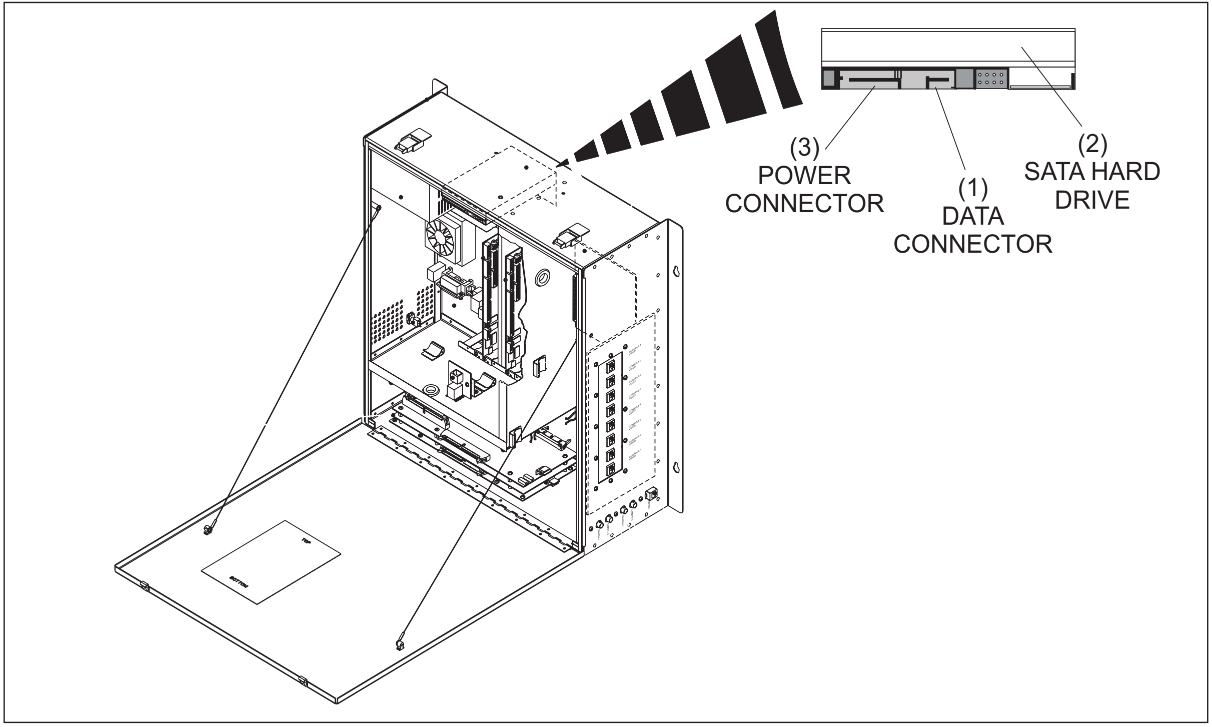
1. Remove the circuit board from its antistatic bag or wrapping.
2. Determine any set-up requirements for the board and configure it as described in the *Circuit Board Setup Procedures* within this section.   Refer to the chart titled *Configuration Chart*.
3. Carefully insert the circuit board into its original PCI Slot on the Motherboard.
4. Secure the board to the Scorer Computer chassis with the appropriate Phillips head screw.
5. Connect any cable(s) disconnected during board removal.
6. Connect power to the Scorer Computer.

HARD DRIVE REPLACEMENT

Perform the following steps to replace the hard drive Refer to figure titled *Scorer Computer Hard Drive Location*:

Installation of Hard Drive

1. Turn off the Scorer Computer using the main power switch located on the left side of the chassis. Remove the power cord from the power supply. Open the cover of the scorer computer.
2. Disconnect the power and data cables from the hard drive.
3. Loosen the phillip head screws that hold the hard drive bracket to computer chassis. Remove the hard drive and bracket.
4. If the replacement drive is not mounted to a bracket, remove the bracket from the original drive, and attach it to the replacement drive.
5. Carefully install replacement hard drive and bracket into the Scorer Computer . Tighten the screw(s) to secure the bracket and drive.
6. Attach the power and data cables disconnected in step 2 to the new hard drive.
7. Disconnect the network cable (100base-TX).
8. Connect the power cord the power supply receptacle and turn the Scorer Computer on using the main power switch.



Scorer Computer - Hard Drive Location

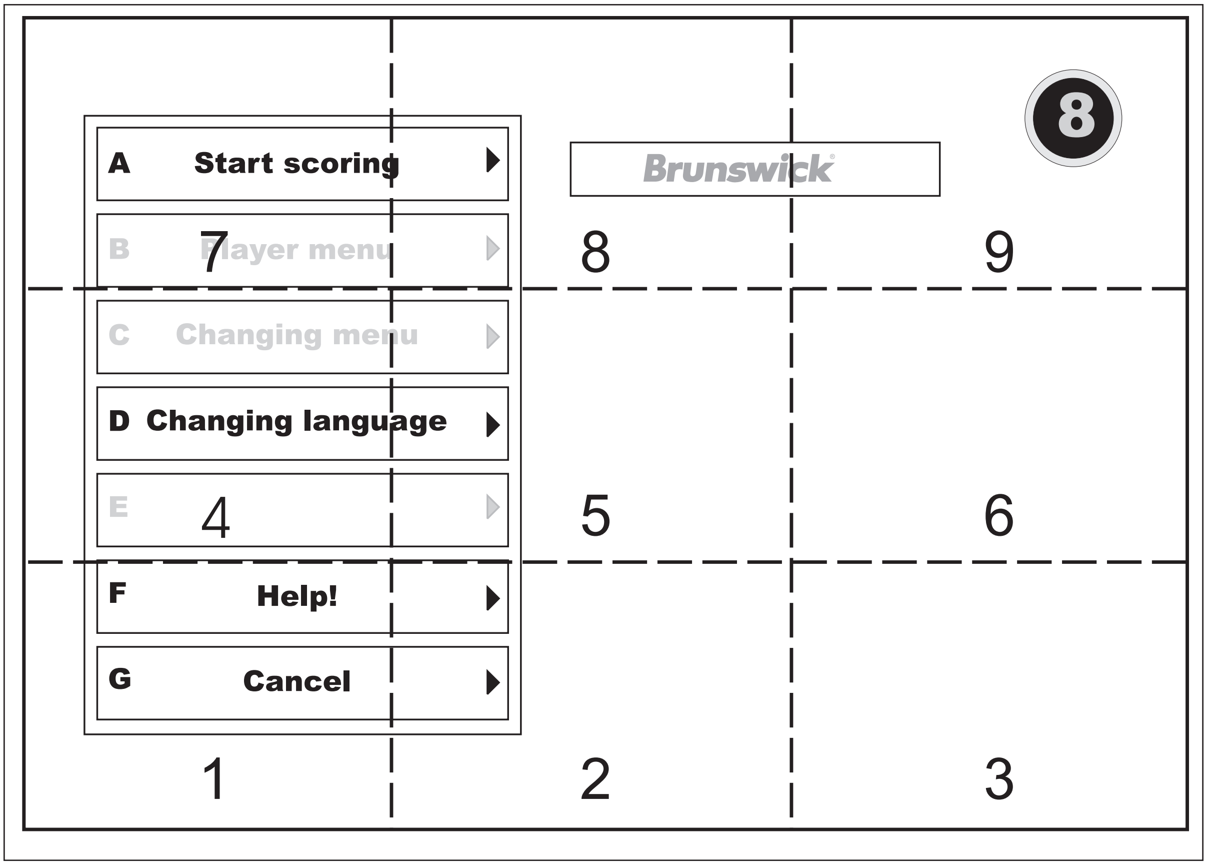
(1) DATA CONNECTOR (2) SATA HARD DRIVE ((3) POWER CONNECTOR

Configure the Hard Drive

IMPORTANT: *To get the scorer information to appear on overhead monitors the overhead type must be set properly. The hard drives comes pre-configured for use with the overhead monitor type installed in your center. If the hard drive mistakenly becomes configured for the wrong type AND the center is equipped with keypads , the Ethernet cable must be plugged into the scorer computer and the overhead type must be changed using the Config.exe program located at the Vector/Vector Plus server. Failure to configure the overhead in this way may result in blank overhead screens. This procedure does not apply to installations with lower LCD touchscreens as the overhead type can be set through the scorer computer configuration screen using the touchscreen.*

Set Scorer Computer Configuration (All installations)

1. After the scorer has booted, press the "Menu" key for keypads, or touch the screen for touchscreens so that main scorer entry screen is displayed. For keypad installations, access the Scorer Computer configuration screen by entering the factory default password: /VECTOR. For touchscreen installations, enter 939393 using the password grid as shown below. Refer to figures titled *Configuration Menu Password - Touchscreen* and *Scorer Computer Configuration Screen*.



Configuration Menu Password - Touchscreen

2. Enter the Scoring Computer number, the starting lane for that scorer computer, the number of lanes controlled by that scorer computer, the pinsetter type in use, and a new menu password as appropriate. For Vector-HD the Overhead type should is ‘HD”.

   The *Direct Monitor Ctrl* checkbox will automatically be checked and grayed out when the “HD” overhead type is selected.

   The *Bumpers Installed* checkbox should be selected (checked) for centers that have the Brunswick automated bumpers installed.

   If you have LCD lower screens, **Do Not** calibrate the touchscreen at this time.

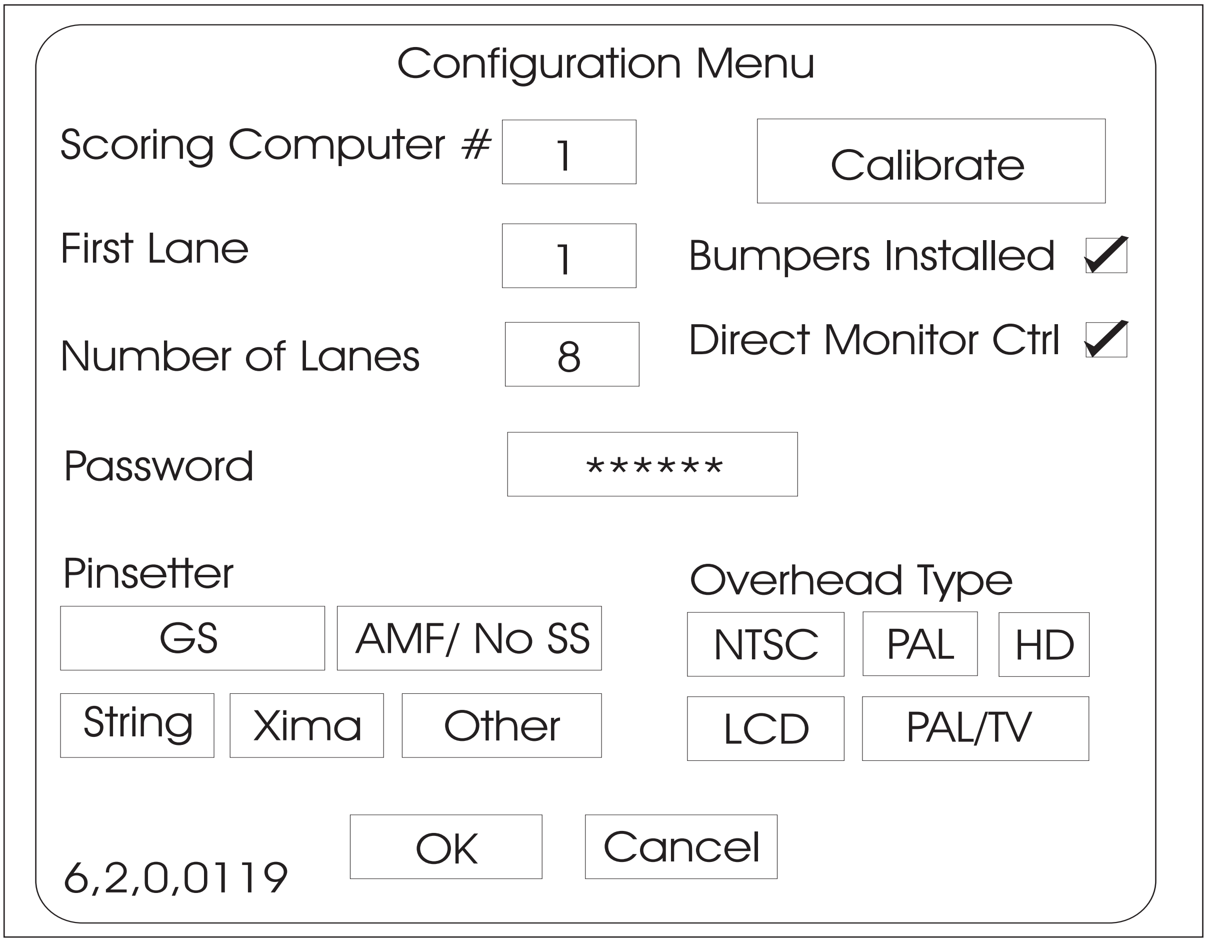
3. Press OK to reboot the Scorer Computer.

NOTE: *Select the overhead type as appropriate, if you select the wrong overhead, type; “the overhead screens will not properly display the score sheet”.*

NOTE: *The configuration can be performed at any keypad or touchscreen connected to the Scorer Computer. This is a one time setup that does not need to be repeated at the other lanes.*

4. For touchscreen installations, calibrate each touchscreens, as needed, using the “Calibrate” button

.



Configuration Menu

Scoring Computer # 1

First Lane 1

Number of Lanes 8

Password ******

Bumpers Installed ☑

Direct Monitor Ctrl ☑

6,2,0,0119

Scorer Computer Configuration Screen

Updated the Drives Programming

Updating the programming of the hard drive involves downloading of new software, commercials and multimedia files to the Scorer Computer's drive from the control desk. Once this is complete, the programs's settings must be synchronized with the control desk. Finally, if cameras are used for scoring, they need to be calibrated using the Pin Settings screen at the control desk.

1. From the control desk, update the software, commercials and multimedia. Refer to the *"Updating Scorer Software"* procedure located in the *"Vector/Vector Plus Control Desk"* Section of this manual. Reboot the Scorer Computer after the updates have finished.

2. Synchronize the Scorer Computer to the control desk. Refer to the *"Scorer Computer Synchronization"* procedure.

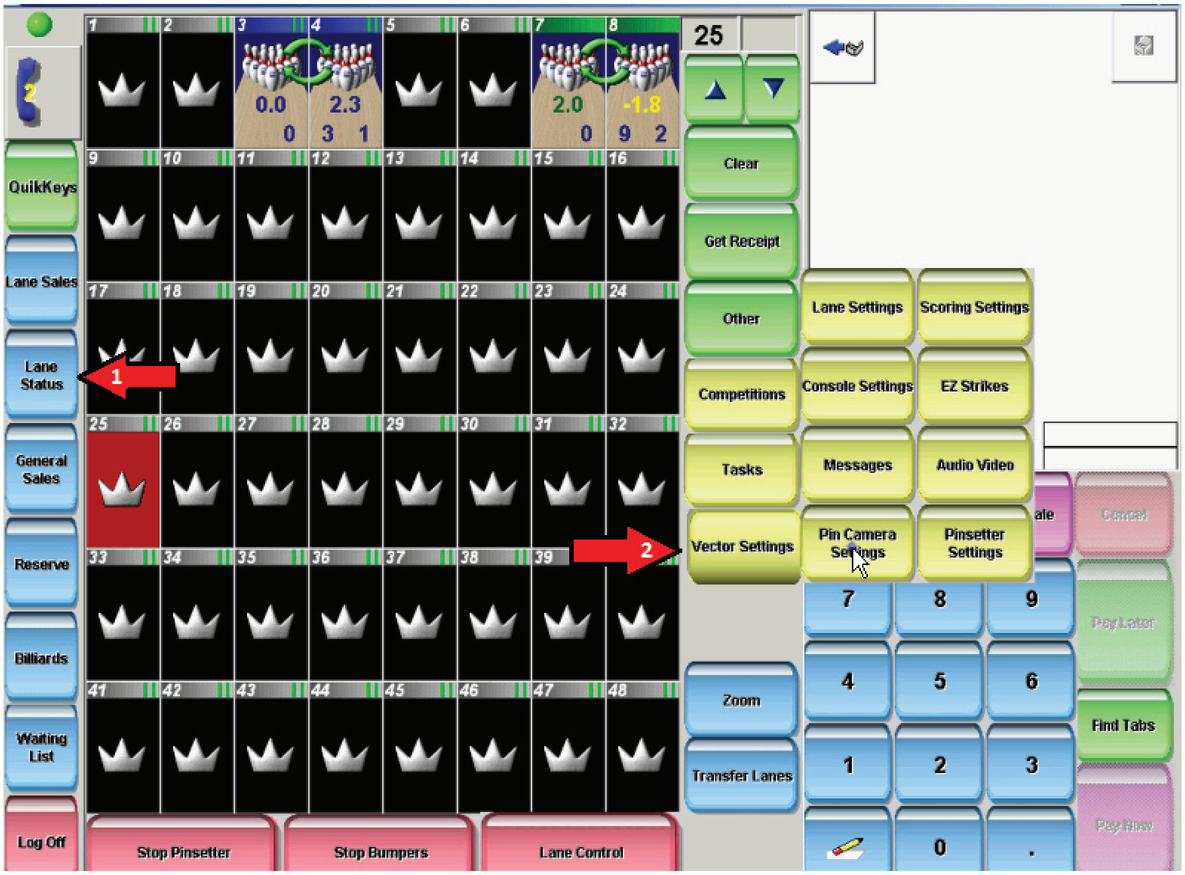
3. If pin cameras are used for scoring, calibrate the cameras using the "pin settings" screen located at the control desk. Refer to the "Pinsettings and Camera Calibrations" procedures located in the "Vector Camera Assembly" section of this manual.

4. Reboot the Scorer Computer and verify its operation.

Scorer Computer Synchronization

After replacing the hard drive or updating the software on the Scorer Computer, the control desk computer and the Scorer Computer must be synchronized. To synchronize them perform the following steps:

1. At the Lane Status screen in the Vector Plus Desk program, select the Vector Settings button.



QuikKeys
Lane Sales
Lane Status
1
General Sales
Reserve
Billiards
Waiting List
Log Off
Stop Pinsetter
Stop Bumpers
Lane Control
25
Clear
Get Receipt
Other
Competitions
Tasks
Vector Settings
2
Zoom
Transfer Lanes
Lane Settings
Scoring Settings
Console Settings
EZ Strikes
Messages
Audio Video
Pin Camera Settings
Pinsetter Settings
Cancel
Pay Later
Find Tabs
Pay Now

Lane Status - Vector Settings

2. Using each of the Vector Settings buttons, send the desired selection settings to the scorer computer.

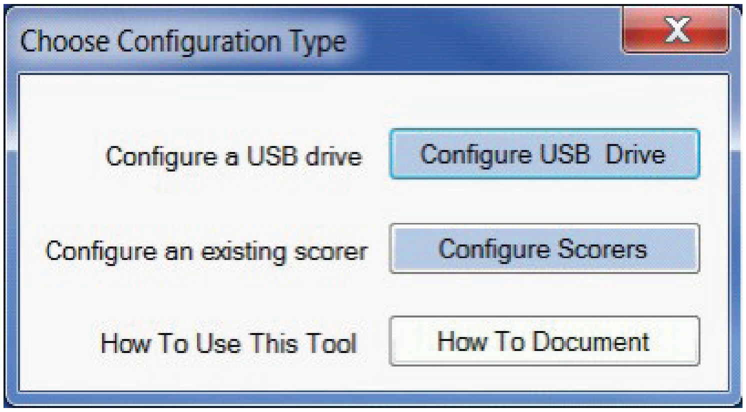
SCORER CONFIGURATION UTILITY

The Scorer Configuration Utility provides a means for users to configure a Scorer Computer hard drive when the configuration menu cannot be accessed from a scorer console. This may occur in situations such as a center that has keypads with the wrong overhead type selected. Settings that can be configured are similar to those available through the configuration menu at the scorer console. These include; First Lane, Number of Lanes, Touchscreen and Keypad Passwords, Pinsetter Type, and Overhead Type. The utility also allows users to identify if Bumpers are installed, whether Direct Monitor Control should be used for the overheads, and if the Scorer is connected to a Classic scoring system keypad.

Selecting Configuring Type

In most cases the Scorer Configuration Utility will be used for drives already installed in a Scorer Computer however the utility has the capability of configuring drives attached to a computer using a USB to SATA adapter. If using the USB method of configuration, make sure the drive is connected to the computer's USB port, has been recognized by the computer, and has been assigned a drive letter.

1. At the Windows desktop screen (the screen with the icons) of the Vector or Vector Plus SERVER computer, double-click on the ScorerConfigurationUtility.exe icon. If the icon is not on the desktop screen the program can be found in the C:\Brunswick\Utilities folder.



Chose Configuration Type screen

2. Select the desired configuration type as follows:

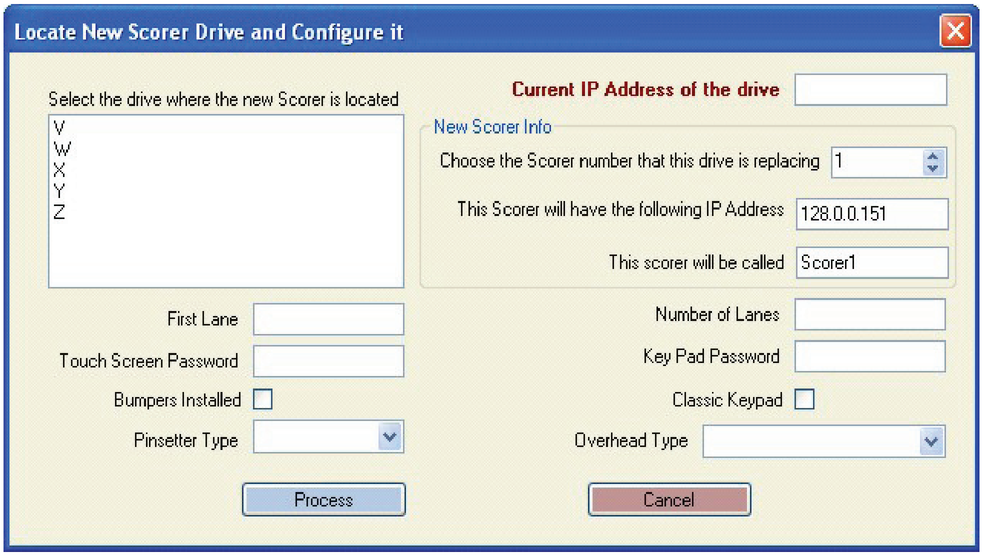
   Configure USB Drive - Choose this if the hard drive is connected to the server using a USB to SATA adapter.

   Configure Scorers - Choose this if the hard drive is already installed in a working Scorer Computer.

   How To Document: Choose this to display an utility help document.

Configuring an USB Drive

1. On the *Locate New Scorer Drive and Configure It* screen, select the drive letter assigned to the hard drive. Once a drive is selected, the currently assigned to the drive will also display in the appropriate fields.



Locate New Scorer Drive and Configure it

Select the drive where the new Scorer is located
V
W
X
Y
Z

Current IP Address of the drive

New Scorer Info

Choose the Scorer number that this drive is replacing 1

This Scorer will have the following IP Address 128.0.0.151

This scorer will be called Scorer1

First Lane

Number of Lanes

Touch Screen Password

Key Pad Password

Bumpers Installed ☐

Classic Keypad ☐

Pinsetter Type

Overhead Type

Hard Drive Configuration Screen

2. In the *New Scorer Info* section, select the Scorer Computer number as appropriate.

***NOTE:** Selecting a new Scorer Number is not mandatory. If the number is correct for the Scorer Computer in which the drive will be installed or if the number will be assigned from the console after the drive is installed, skip this step.*

3. Enter the following configuration information concerning the drive as appropriate:

   First Lane - Enter the lane number of 1st lane for the scorer computer

   Number Of Lanes - Enter the total number controlled by the scorer computer.

   TouchScreen Password - Enter a password to access the configuration screen from a touchscreen consoles.

   Keypad Password - Enter a password to access the configuration screen from keypad consoles.

   Bumper Installed - Check this box if automated bumpers (Pinball Wizard) are connected to the Scorer Computer.

   Pinsetter Type - Select the type of pinsetters connected to the Scorer Computer.

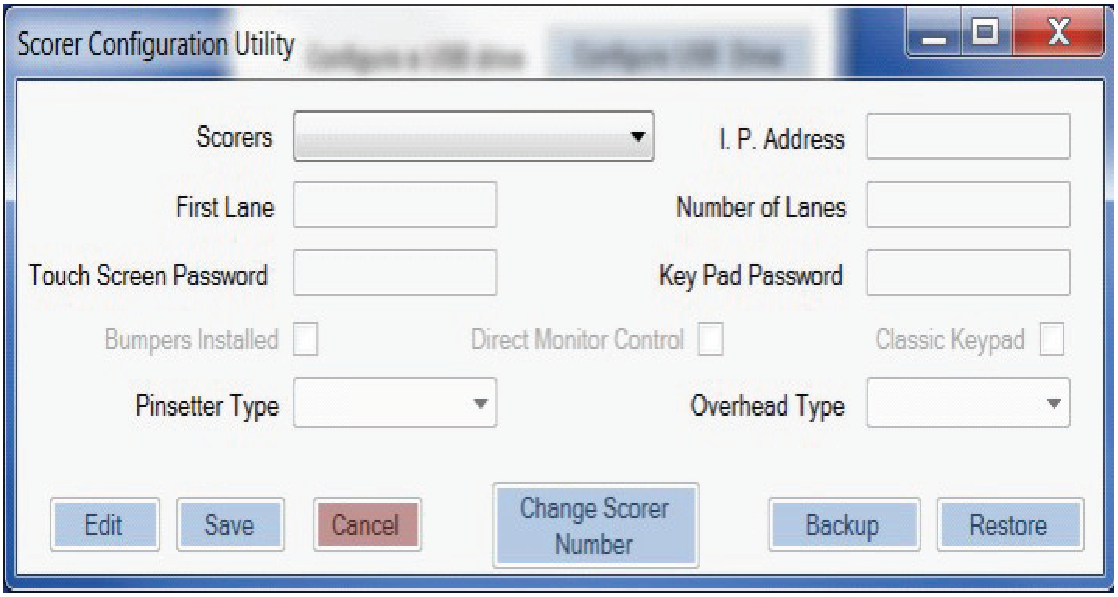
   Overhead Type - For Vector HD scoring this setting must be set to HD.

   Classic Keypad - For Vector scoring systems leave this selection unchecked.

4. Click the *Process* button to update the hard drive.

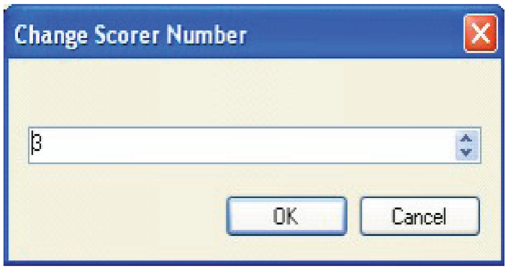
Configuring a Drive Installed in a Scorer Computer

1. On the *Scorer Configuration* screen, choose the Scorer to be modified from the *Scorers* drop-down box. Once a scorer is selected, the *Current IP Address* will be shown in the top right of the screen. Additional information currently assigned to the drive will also be displayed in the appropriate fields.


Scorer Configuration Utility
Scorers
I. P. Address
First Lane
Number of Lanes
Touch Screen Password
Key Pad Password
Bumpers Installed
Direct Monitor Control
Classic Keypad
Pinsetter Type
Overhead Type
Edit
Save
Cancel
Change Scorer Number
Backup
Restore

Scorer Configuration Screen

2. (Optional) If you want to change the scorer computer number of the currently selected scorer click the *Change Scorer Number* button. Choose a new scorer number from the drop down list and click OK. Otherwise skip to step 3.


Change Scorer Number
3
OK
Cancel

Change Scorer Number

3. Enter the following configuration information concerning the drive as appropriate:

   First Lane - Enter the lane number of 1st lane for the scorer computer

   Number Of Lanes - Enter the total number controlled by the scorer computer.

   TouchScreen Password - Enter the password used to access the configuration screen from a touchscreen consoles.

   Keypad Password - Enter the password used to access the configuration screen from keypad consoles.

   Bumper Installed - Check this box if automated bumpers (Pinball Wizard) are connected to the Scorer Computer.

   Pinsetter Type - Select the type of pinsetters connected to the Scorer Computer.

   Overhead Type - For Vector HD scoring this setting must be set to HD.

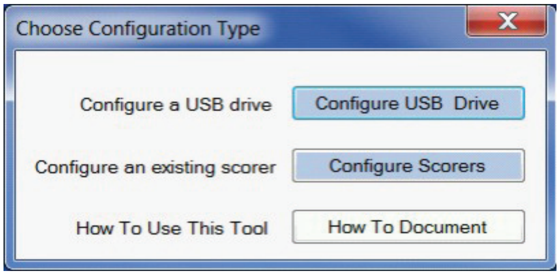
   Classic Keypad - For Vector scoring systems leave this selection unchecked.

4. Click the *OK* button to update the hard drive.

Back-up and Restore A Hard Drive's Settings

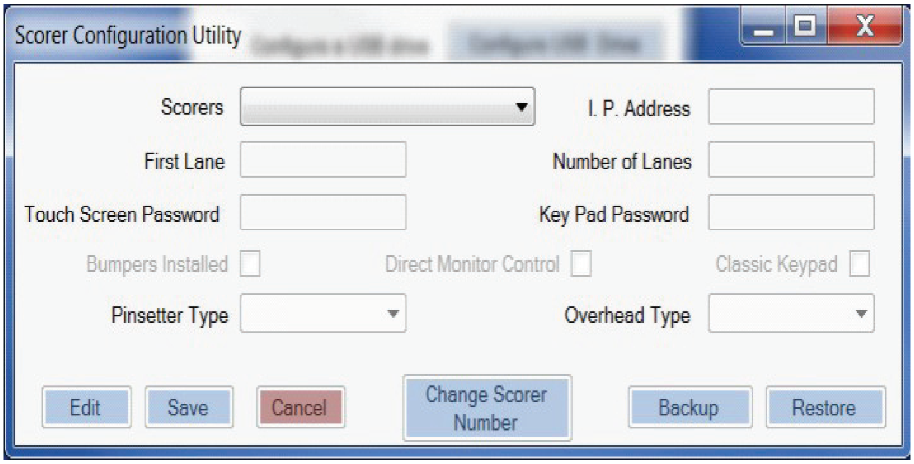
Having a good back-up of the settings of the Scorer Computer's hard drives allows the mechanic to easily restore a drives configuration and quickly get a replacement drive up and running. The back-up and restore functions are available using the Scorer Configuration Utility located on the Vector or Vector Plus SERVER computer.

1. At the Windows desktop screen (the screen with the icons) of the Vector or Vector Plus SERVER computer, double-click on the ScorerConfigurationUtility.exe icon. If the icon is not on the desktop screen the program can be found in the C:\Brunswick\Utilities folder.


Choose Configuration Type
X
Configure a USB drive
Configure USB Drive
Configure an existing scorer
Configure Scorers
How To Use This Tool
How To Document

Chose Configuration Type screen

2. Select the *Configure Scorers* button


Scorer Configuration Utility
Scorers
I. P. Address
First Lane
Number of Lanes
Touch Screen Password
Key Pad Password
Bumpers Installed
Direct Monitor Control
Classic Keypad
Pinsetter Type
Overhead Type
Edit
Save
Cancel
Change Scorer Number
Backup
Restore

Scorer Configuration Screen

3. Select the desired Scoring Computer from the drop-down list on the top-left of the window. To **backup** a configuration, click "Backup". To **restore** a previously backed up configuration, click "Restore." Refer to the figure titled *Scorer Configuration Screen.*

DAILY REBOOT PROCEDURE - ALL SYSTEMS

A daily reboot of the system components will cause all software and related computer processes to be closed and restarted, freeing up used resources and allowing the system to operate at peak efficiency. It is suggested that the following reboot procedure be done each morning prior to the start of business.

Reboot Procedure:

1. Scoring computer(s):
    a. If the scoring computers are left on overnight, utilize the restart command in the desk system.
    b. If the scoring computers are turned off overnight, utilize either the Wake-On-Lan feature (if available) or power on the scorers manually via the power button located on each unit.

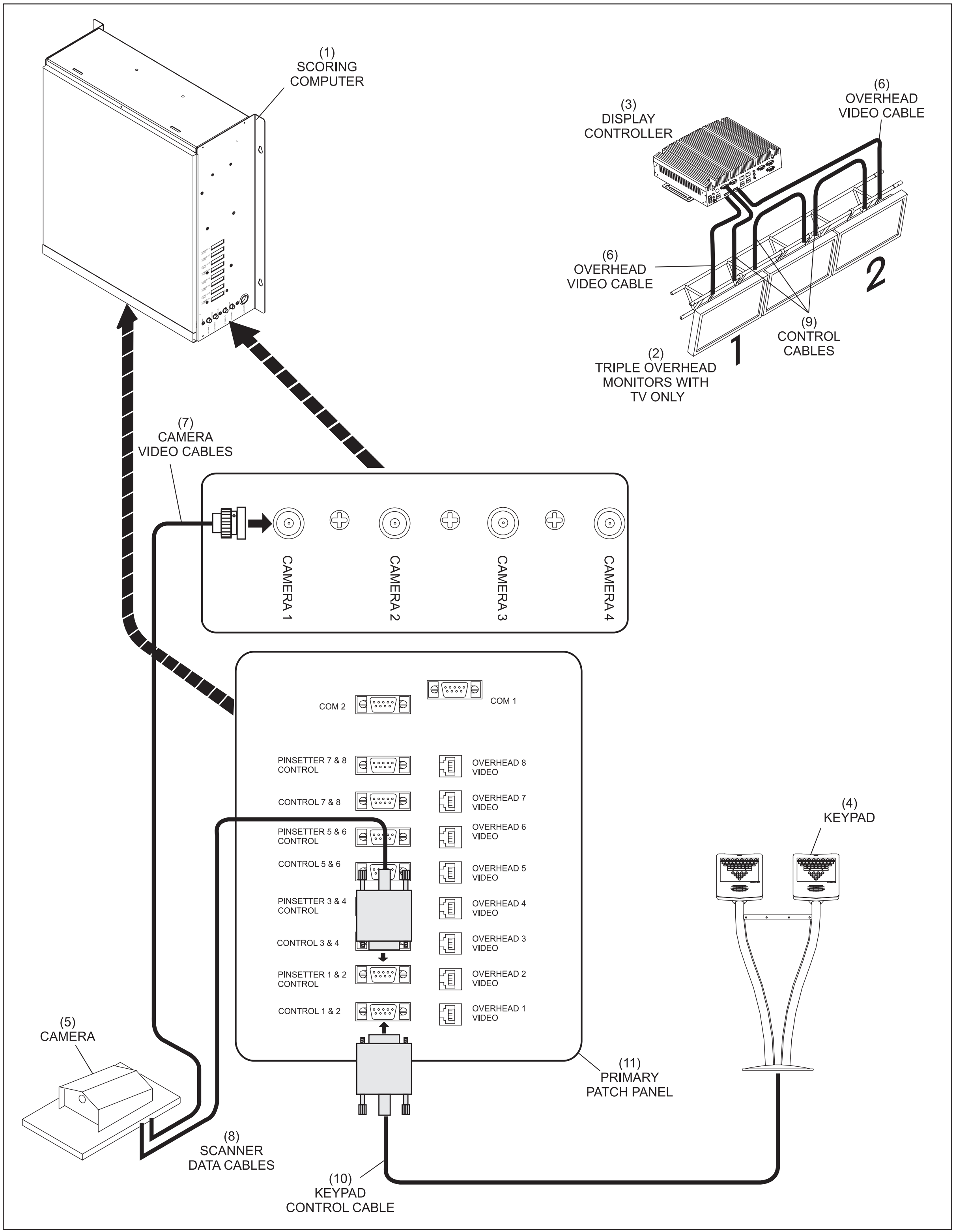
2. Server computer:
    a. Close all running applications on the server. Verify that none of the clients are running the desk software.
    b. Restart the computer using the standard Windows procedure.
    c. Log into Windows to allow all programs to start up as needed.

3. Display Controllers (Vector HD Systems):
    a. If the controllers are left on overnight, utilize the restart command in the desk system.
    b. If the controllers are turned off overnight, utilize either the Wake-On-Lan feature or power the controllers manually via the power button located on each unit.

4. Client computer(s):
    a. If the client(s) are left on overnight, restart the computer using the standard Windows procedure.
    b. If the client(s) are turned off overnight, turn on the unit using the power button on the computer.
    c. If needed turn on the monitor and any other peripherals.

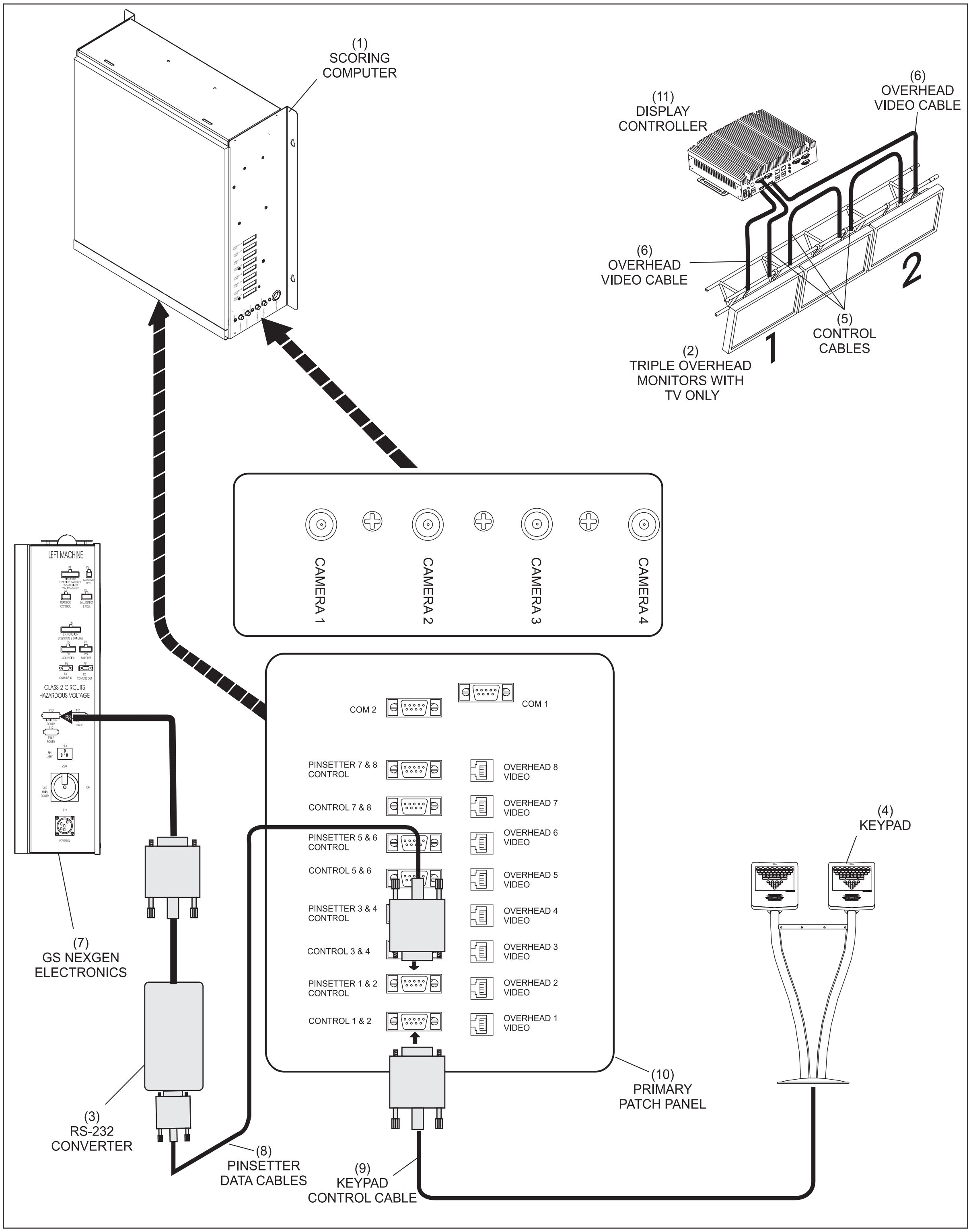
5. Verify system operation:
    a. Open the desk system and verify that communication to the lanes is working.
    b. Turn on the overhead monitors using the desk system if needed.

CABLING OVERVIEW


(1)
SCORING
COMPUTER
(3)
DISPLAY
CONTROLLER
(6)
OVERHEAD
VIDEO CABLE
(6)
OVERHEAD
VIDEO CABLE
2
(9)
CONTROL
CABLES
1
(2)
TRIPLE OVERHEAD
MONITORS WITH
TV ONLY
(7)
CAMERA
VIDEO CABLES
CAMERA 1
CAMERA 2
CAMERA 3
CAMERA 4
COM 2
COM 1
PINSETTER 7 & 8
CONTROL
OVERHEAD 8
VIDEO
CONTROL 7 & 8
OVERHEAD 7
VIDEO
PINSETTER 5 & 6
CONTROL
OVERHEAD 6
VIDEO
CONTROL 5 & 6
OVERHEAD 5
VIDEO
PINSETTER 3 & 4
CONTROL
OVERHEAD 4
VIDEO
CONTROL 3 & 4
OVERHEAD 3
VIDEO
PINSETTER 1 & 2
CONTROL
OVERHEAD 2
VIDEO
CONTROL 1 & 2
OVERHEAD 1
VIDEO
(4)
KEYPAD
(5)
CAMERA
(11)
PRIMARY
PATCH PANEL
(8)
SCANNER
DATA CABLES
(10)
KEYPAD
CONTROL CABLE

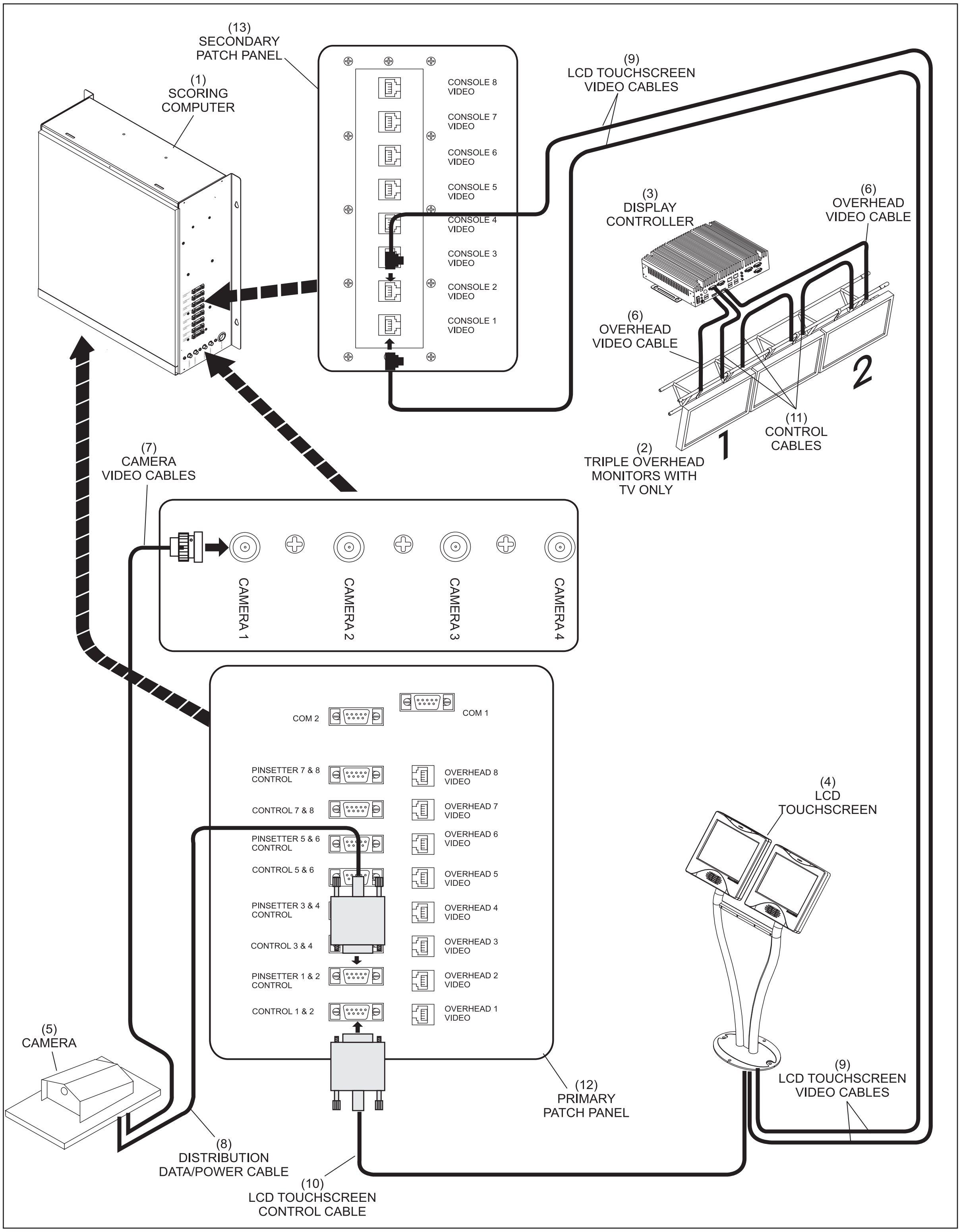
Vector-HD Scoring Computer Cabling - Keypads, Non-GS Pinsetters

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS W/TV ONLY
(3) DISPLAY CONTROLLER
(4) KEYPAD
(5) CAMERA
(6) OVERHEAD VIDEO CABLE
(7) CAMERA VIDEO CABLES
(8) SCANNER DATA CABLES
(9) CONTROL CABLES
(10) KEYPAD CONTROL CABLE
(11) PRIMARY PATCH PANEL


(1)
SCORING
COMPUTER
(11)
DISPLAY
CONTROLLER
(6)
OVERHEAD
VIDEO CABLE
(6)
OVERHEAD
VIDEO CABLE
2
1
(5)
CONTROL
CABLES
(2)
TRIPLE OVERHEAD
MONITORS WITH
TV ONLY
CAMERA 1
CAMERA 2
CAMERA 3
CAMERA 4
LEFT MACHINE
CLASS 2 CIRCUITS
HAZARDOUS VOLTAGE
COM 2
COM 1
PINSETTER 7 & 8
CONTROL
OVERHEAD 8
VIDEO
CONTROL 7 & 8
OVERHEAD 7
VIDEO
PINSETTER 5 & 6
CONTROL
OVERHEAD 6
VIDEO
CONTROL 5 & 6
OVERHEAD 5
VIDEO
PINSETTER 3 & 4
CONTROL
OVERHEAD 4
VIDEO
CONTROL 3 & 4
OVERHEAD 3
VIDEO
PINSETTER 1 & 2
CONTROL
OVERHEAD 2
VIDEO
CONTROL 1 & 2
OVERHEAD 1
VIDEO
(4)
KEYPAD
(7)
GS NEXGEN
ELECTRONICS
(10)
PRIMARY
PATCH PANEL
(3)
RS-232
CONVERTER
(8)
PINSETTER
DATA CABLES
(9)
KEYPAD
CONTROL CABLE

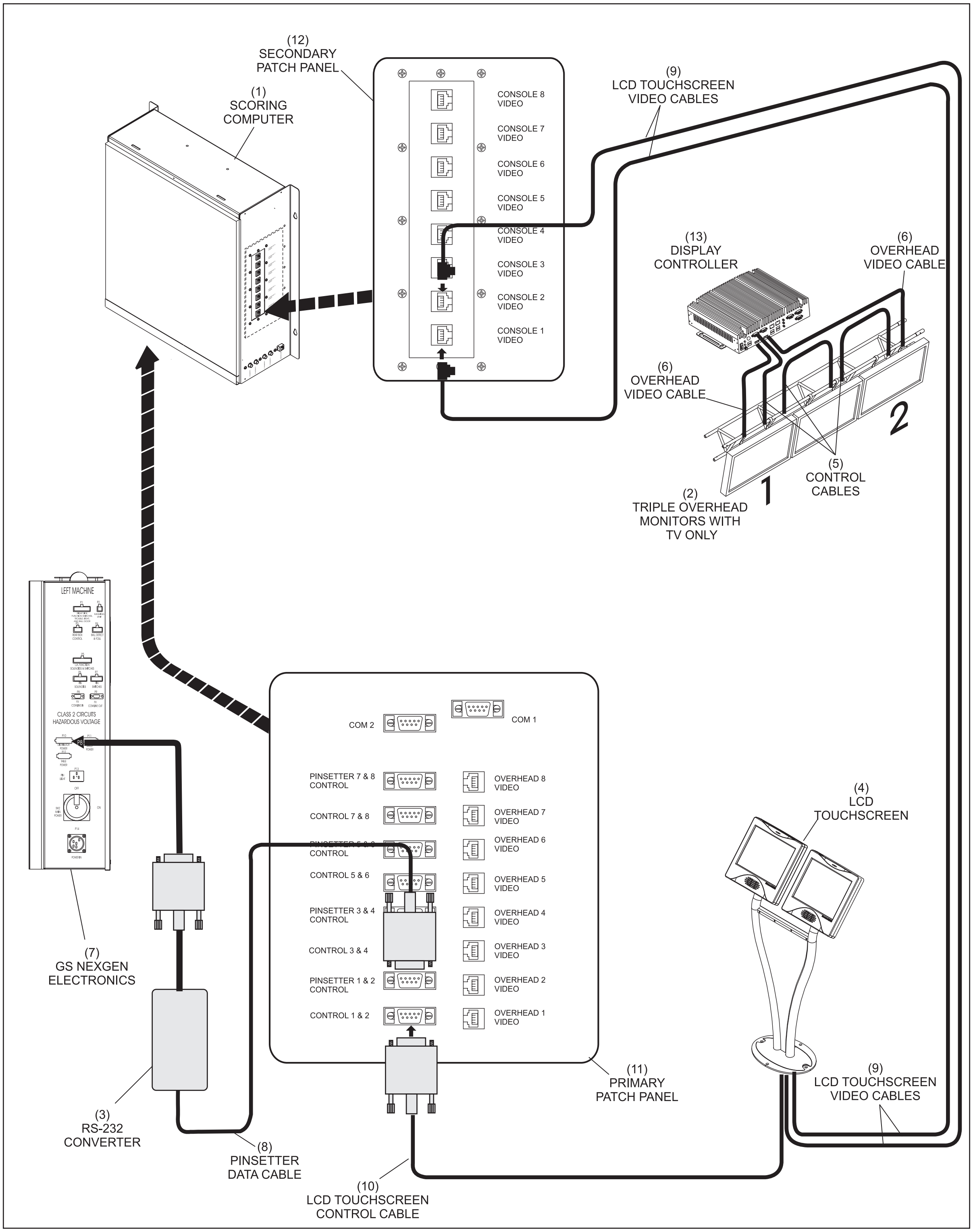
Vector -HD Scoring Computer Cabling - Keypads, GS Pinsetters

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS W/TV ONLY
(3) RS-232 CONVERTER
(4) KEYPAD
(5) CONTROL CABLES
(6) OVERHEAD VIDEO CABLE
(7) GS NEXGEN ELECTRONICS
(8) PINSETTER DATA CABLES
(9) KEYPAD CONTROL CABLE
(10) PRIMARY PATCH PANEL
(11) DISPLAY CONTROLLER


(13)
SECONDARY
PATCH PANEL
(1)
SCORING
COMPUTER
CONSOLE 8
VIDEO
CONSOLE 7
VIDEO
CONSOLE 6
VIDEO
CONSOLE 5
VIDEO
CONSOLE 4
VIDEO
CONSOLE 3
VIDEO
CONSOLE 2
VIDEO
CONSOLE 1
VIDEO
(9)
LCD TOUCHSCREEN
VIDEO CABLES
(3)
DISPLAY
CONTROLLER
(6)
OVERHEAD
VIDEO CABLE
(6)
OVERHEAD
VIDEO CABLE
2
1
(11)
CONTROL
CABLES
(2)
TRIPLE OVERHEAD
MONITORS WITH
TV ONLY
(7)
CAMERA
VIDEO CABLES
CAMERA 1
CAMERA 2
CAMERA 3
CAMERA 4
COM 2
COM 1
PINSETTER 7 & 8
CONTROL
CONTROL 7 & 8
PINSETTER 5 & 6
CONTROL
CONTROL 5 & 6
PINSETTER 3 & 4
CONTROL
CONTROL 3 & 4
PINSETTER 1 & 2
CONTROL
CONTROL 1 & 2
OVERHEAD 8
VIDEO
OVERHEAD 7
VIDEO
OVERHEAD 6
VIDEO
OVERHEAD 5
VIDEO
OVERHEAD 4
VIDEO
OVERHEAD 3
VIDEO
OVERHEAD 2
VIDEO
OVERHEAD 1
VIDEO
(4)
LCD
TOUCHSCREEN
(5)
CAMERA
(12)
PRIMARY
PATCH PANEL
(9)
LCD TOUCHSCREEN
VIDEO CABLES
(8)
DISTRIBUTION
DATA/POWER CABLE
(10)
LCD TOUCHSCREEN
CONTROL CABLE

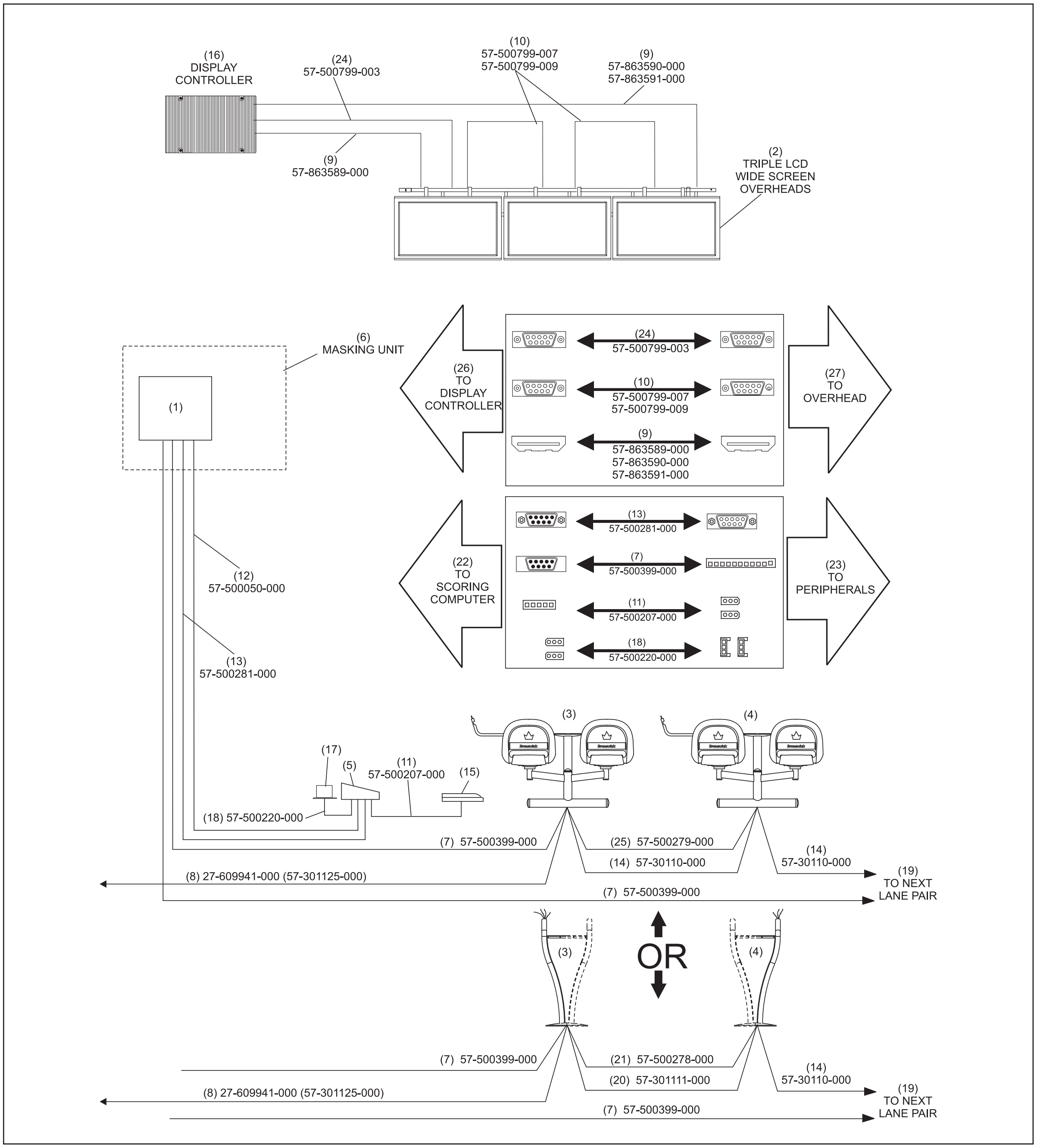
Vector-HD Scoring Computer Cabling - LCD Touchscreen, Non-GS Pinsetters

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS W/TV ONLY
(3) DISPLAY CONTROLLER
(4) LCD TOUCHSCREEN
(5) CAMERA
(6) OVERHEAD VIDEO CABLE
(7) CAMERA VIDEO CABLES
(8) DISTRIBUTION DATA/POWER CABLE
(9) LCD TOUCHSCREEN VIDEO CABLES
(10) LCD TOUCHSCREEN CONTROL CABLE
(11) CONTROL CABLES
(12) PRIMARY PATCH PANEL
(13) SECONDARY PATCH PANEL


(12) SECONDARY PATCH PANEL
(1) SCORING COMPUTER
CONSOLE 8 VIDEO
CONSOLE 7 VIDEO
CONSOLE 6 VIDEO
CONSOLE 5 VIDEO
CONSOLE 4 VIDEO
CONSOLE 3 VIDEO
CONSOLE 2 VIDEO
CONSOLE 1 VIDEO
(9) LCD TOUCHSCREEN VIDEO CABLES
(13) DISPLAY CONTROLLER
(6) OVERHEAD VIDEO CABLE
(6) OVERHEAD VIDEO CABLE
2
1
(5) CONTROL CABLES
(2) TRIPLE OVERHEAD MONITORS WITH TV ONLY
LEFT MACHINE
CLASS 2 CIRCUITS HAZARDOUS VOLTAGE
COM 2
COM 1
PINSETTER 7 & 8 CONTROL
CONTROL 7 & 8
PINSETTER 5 & 6 CONTROL
CONTROL 5 & 6
PINSETTER 3 & 4 CONTROL
CONTROL 3 & 4
PINSETTER 1 & 2 CONTROL
CONTROL 1 & 2
OVERHEAD 8 VIDEO
OVERHEAD 7 VIDEO
OVERHEAD 6 VIDEO
OVERHEAD 5 VIDEO
OVERHEAD 4 VIDEO
OVERHEAD 3 VIDEO
OVERHEAD 2 VIDEO
OVERHEAD 1 VIDEO
(4) LCD TOUCHSCREEN
(7) GS NEXGEN ELECTRONICS
(11) PRIMARY PATCH PANEL
(9) LCD TOUCHSCREEN VIDEO CABLES
(3) RS-232 CONVERTER
(8) PINSETTER DATA CABLE
(10) LCD TOUCHSCREEN CONTROL CABLE

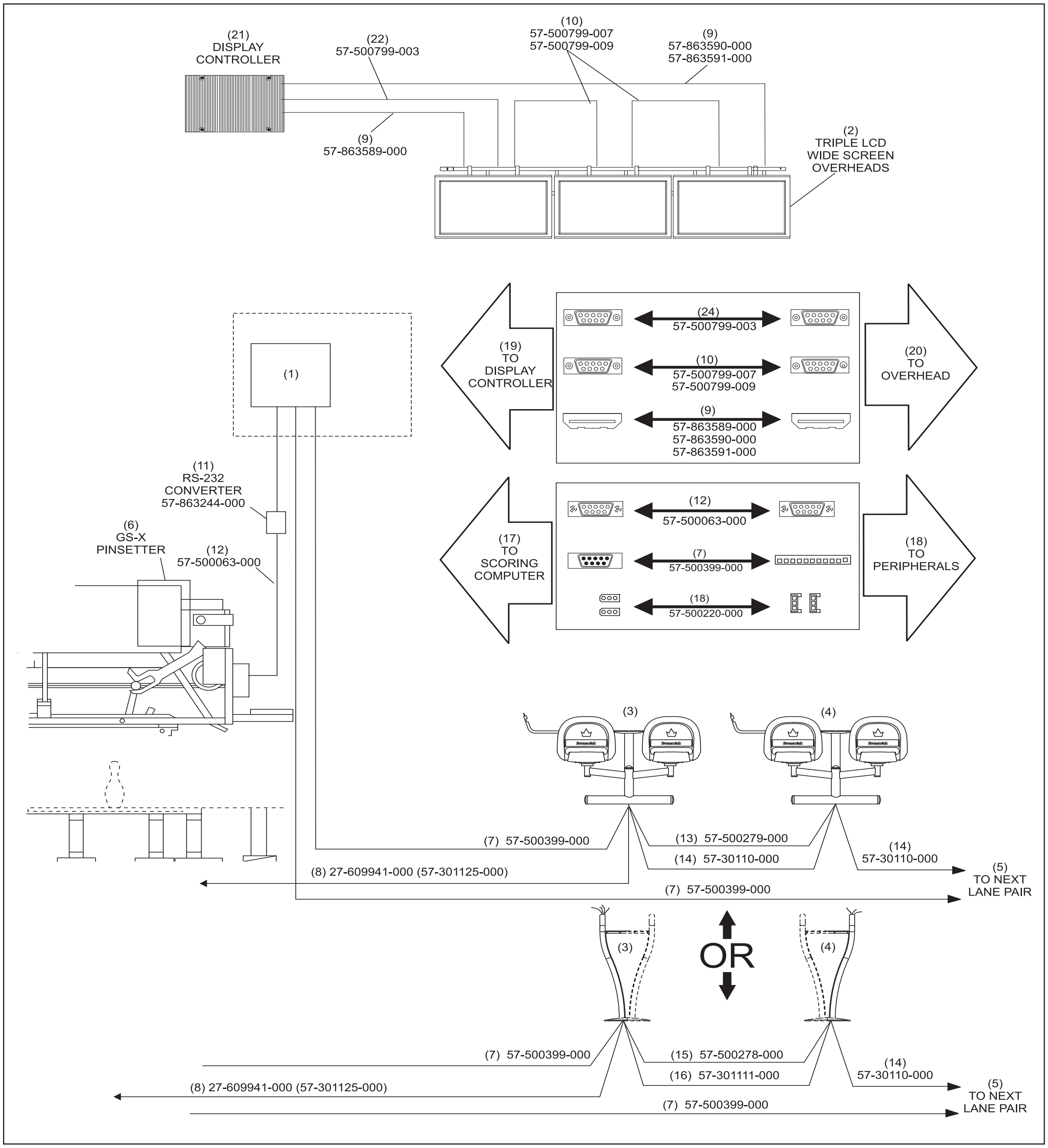
Vector - HD Scoring Computer Cabling - LCD Touchscreen, GS Pinsetters

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS W/TV ONLY
(3) RS 232 CONVERTER
(4) LCD TOUCHSCREEN
(5) CONTROL CABLES
(6) OVERHEAD VIDEO CABLE
(7) GS NEXGEN ELECTRONICS
(8) PINSETTER DATA CABLE
(9) LCD TOUCHSCREEN VIDEO CABLES
(10) LCD TOUCHSCREEN CONTROL CABLE
(11) PRIMARY PATCH PANEL
(12) SECONDARY PATCH PANEL
(13) DISPLAY CONTROLLER


(16) DISPLAY CONTROLLER
(24) 57-500799-003
(10) 57-500799-007 57-500799-009
(9) 57-863590-000 57-863591-000
(9) 57-863589-000
(2) TRIPLE LCD WIDE SCREEN OVERHEADS
(6) MASKING UNIT
(1)
(26) TO DISPLAY CONTROLLER
(24) 57-500799-003
(10) 57-500799-007 57-500799-009
(9) 57-863589-000 57-863590-000 57-863591-000
(27) TO OVERHEAD
(22) TO SCORING COMPUTER
(13) 57-500281-000
(7) 57-500399-000
(11) 57-500207-000
(18) 57-500220-000
(23) TO PERIPHERALS
(12) 57-500050-000
(13) 57-500281-000
(3)
(4)
(17)
(5)
(11) 57-500207-000
(15)
(18) 57-500220-000
(7) 57-500399-000
(25) 57-500279-000
(14) 57-30110-000
(14) 57-30110-000
(8) 27-609941-000 (57-301125-000)
(19) TO NEXT LANE PAIR
(7) 57-500399-000
(3)
OR
(4)
(7) 57-500399-000
(21) 57-500278-000
(20) 57-301111-000
(14) 57-30110-000
(8) 27-609941-000 (57-301125-000)
(19) TO NEXT LANE PAIR
(7) 57-500399-000

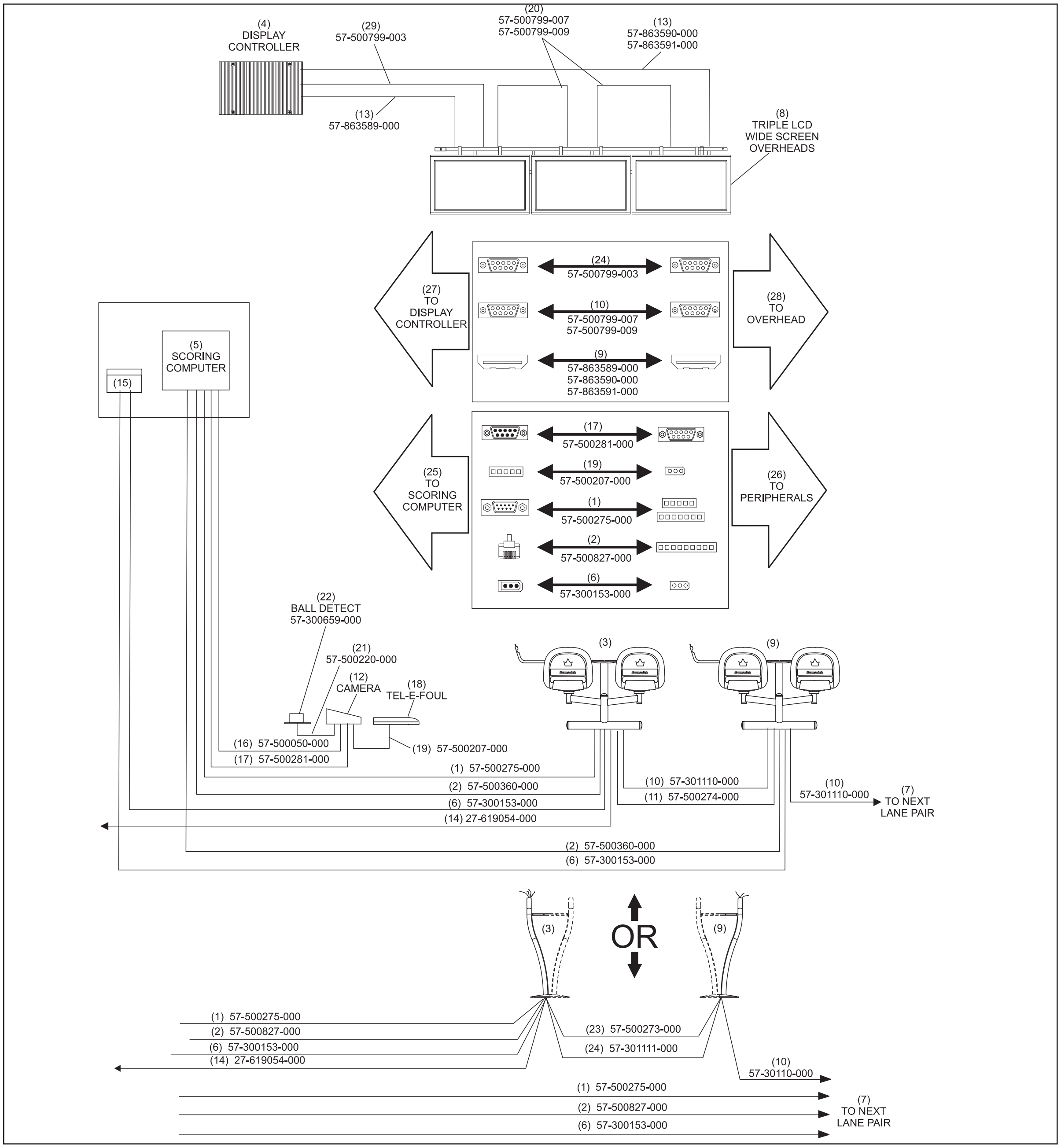
Vector-HD with Keypad, Non-GS Pinsetters - Lane Pair Cables

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS
(3) ODD LANE
(4) EVEN LANE
(5) CAMERA
(6) MASKING UNIT
(7) 57-500399-000 SCORING COMPUTER TO KEYPAD CABLE
(8) 27-609941-000 (57-301125-000) AUDIO - BULK CABLE FROM CONTROL DESK
(9) 57-863589-000, 57-863590-000 57-863591-000 HDMI VIDEO CABLE
(10) 57-500799-00X CONTROL CABLE OVERHEAD TO OVERHEAD
(11) 57-500207-000 FOUL CABLE
(12) 57-500050-000 CAMERA VIDEO CABLE
(13) 57-500281-000 CAMERA DATA CABLE
(14) 57-30110-000 GLOBAL AUDIO CABLE
(15) TEL- E-FOUL
(16) DISPLAY CONTROLLER
(17) PKG. 57-863173-000, P/N 57-300659-000 BALL DETECT
(18) 57-500220-000 BALL DETECT CABLE
(19) TO NEXT LANE PAIR
(20) 57-301111-000 GLOBAL AUDIO
(21) 57-500278-000 LANE CABLE
(22) TO SCORER COMPUTER
(23) TO PERIPHERALS
(24) 57-500799-003 CONTROL CABLE TO OVERHEAD
(25) 57-500279-000 LANE CABLE
(26) TO DISPLAY CONTROLLER
(27) TO OVERHEAD


(21)
DISPLAY
CONTROLLER
(22)
57-500799-003
(10)
57-500799-007
57-500799-009
(9)
57-863590-000
57-863591-000
(9)
57-863589-000
(2)
TRIPLE LCD
WIDE SCREEN
OVERHEADS
(1)
(19)
TO
DISPLAY
CONTROLLER
(24)
57-500799-003
(10)
57-500799-007
57-500799-009
(9)
57-863589-000
57-863590-000
57-863591-000
(20)
TO
OVERHEAD
(11)
RS-232
CONVERTER
57-863244-000
(6)
GS-X
PINSETTER
(12)
57-500063-000
(17)
TO
SCORING
COMPUTER
(12)
57-500063-000
(7)
57-500399-000
(18)
57-500220-000
(18)
TO
PERIPHERALS
(3)
(4)
(7) 57-500399-000
(13) 57-500279-000
(14) 57-30110-000
(14)
57-30110-000
(8) 27-609941-000 (57-301125-000)
(7) 57-500399-000
(5)
TO NEXT
LANE PAIR
(3)
(4)
OR
(7) 57-500399-000
(15) 57-500278-000
(16) 57-301111-000
(14)
57-30110-000
(8) 27-609941-000 (57-301125-000)
(7) 57-500399-000
(5)
TO NEXT
LANE PAIR

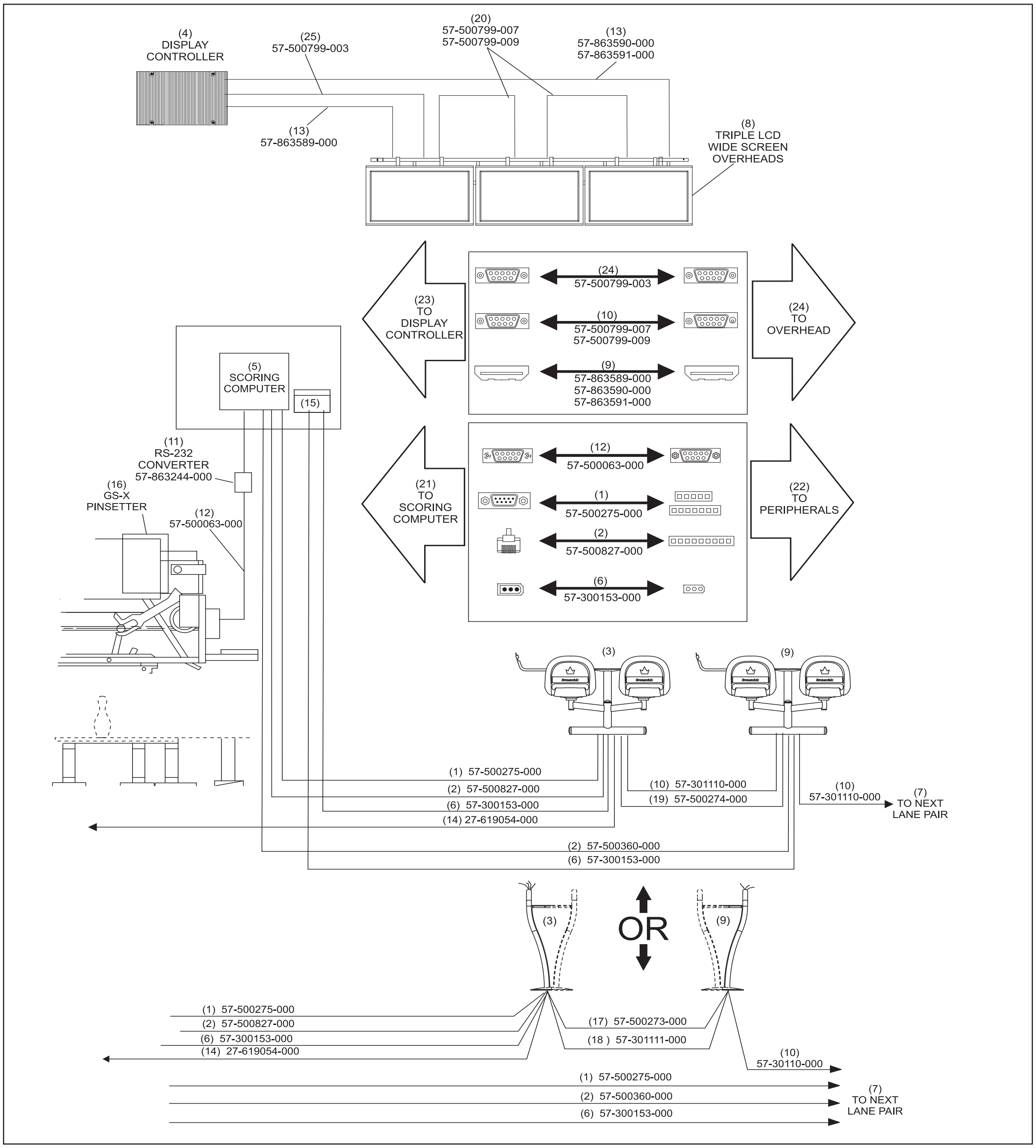
Vector-HD with Keypads, GS-X Pinsetter - Lane Pair Cables

(1) SCORING COMPUTER
(2) TRIPLE WIDE SCREEN OVERHEAD MONITORS
(3) ODD LANE KEYPAD
(4) EVEN LANE KEYPAD
(5) TO NEXT LANE PAIR
(6) GS-X PINSETTER
(7) 57-500310-000 SCORING COMPUTER TO KEYPAD CABLE
(8) 27-609941-000 (57-301125-000) AUDIO - BULK CABLE FROM CONTROL DESK
(9) 57-863589-000, 57-863590-000 57-863591-000 HDMI VIDEO CABLE
(10) 57-500799-00X CONTROL CABLE OVERHEAD TO OVERHEAD
(11) RS-232 CONVERTER 57-863244-000
(12) 57-500063-000 GS-PINSETTER RS-232/485 CABLE
(13) 57-500279-000 LANE CABLE
(14) 57-310110-000 GLOBAL AUDIO
(15) 57-500278-000 LANE CABLE
(16) 57-301111-000 GLOBAL AUDIO
(17) TO SCORER COMPUTERS
(18) TO PERIPHERALS
(19) TO DISPLAY CONTROLLER
(20) TO OVERHEAD
(21) DISPLAY CONTROLLER
(22) 57-500799-003 CONTROL CABLE TO OVERHEAD


(4) DISPLAY CONTROLLER
(29) 57-500799-003
(20) 57-500799-007 57-500799-009
(13) 57-863590-000 57-863591-000
(13) 57-863589-000
(8) TRIPLE LCD WIDE SCREEN OVERHEADS
(27) TO DISPLAY CONTROLLER
(24) 57-500799-003
(10) 57-500799-007 57-500799-009
(9) 57-863589-000 57-863590-000 57-863591-000
(28) TO OVERHEAD
(5) SCORING COMPUTER
(15)
(25) TO SCORING COMPUTER
(17) 57-500281-000
(19) 57-500207-000
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(26) TO PERIPHERALS
(22) BALL DETECT 57-300659-000
(21) 57-500220-000
(12) CAMERA
(18) TEL-E-FOUL
(3)
(9)
(16) 57-500050-000
(17) 57-500281-000
(19) 57-500207-000
(1) 57-500275-000
(2) 57-500360-000
(6) 57-300153-000
(14) 27-619054-000
(10) 57-301110-000
(11) 57-500274-000
(10) 57-301110-000
(7) TO NEXT LANE PAIR
(2) 57-500360-000
(6) 57-300153-000
(3)
OR
(9)
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(14) 27-619054-000
(23) 57-500273-000
(24) 57-301111-000
(10) 57-30110-000
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(7) TO NEXT LANE PAIR

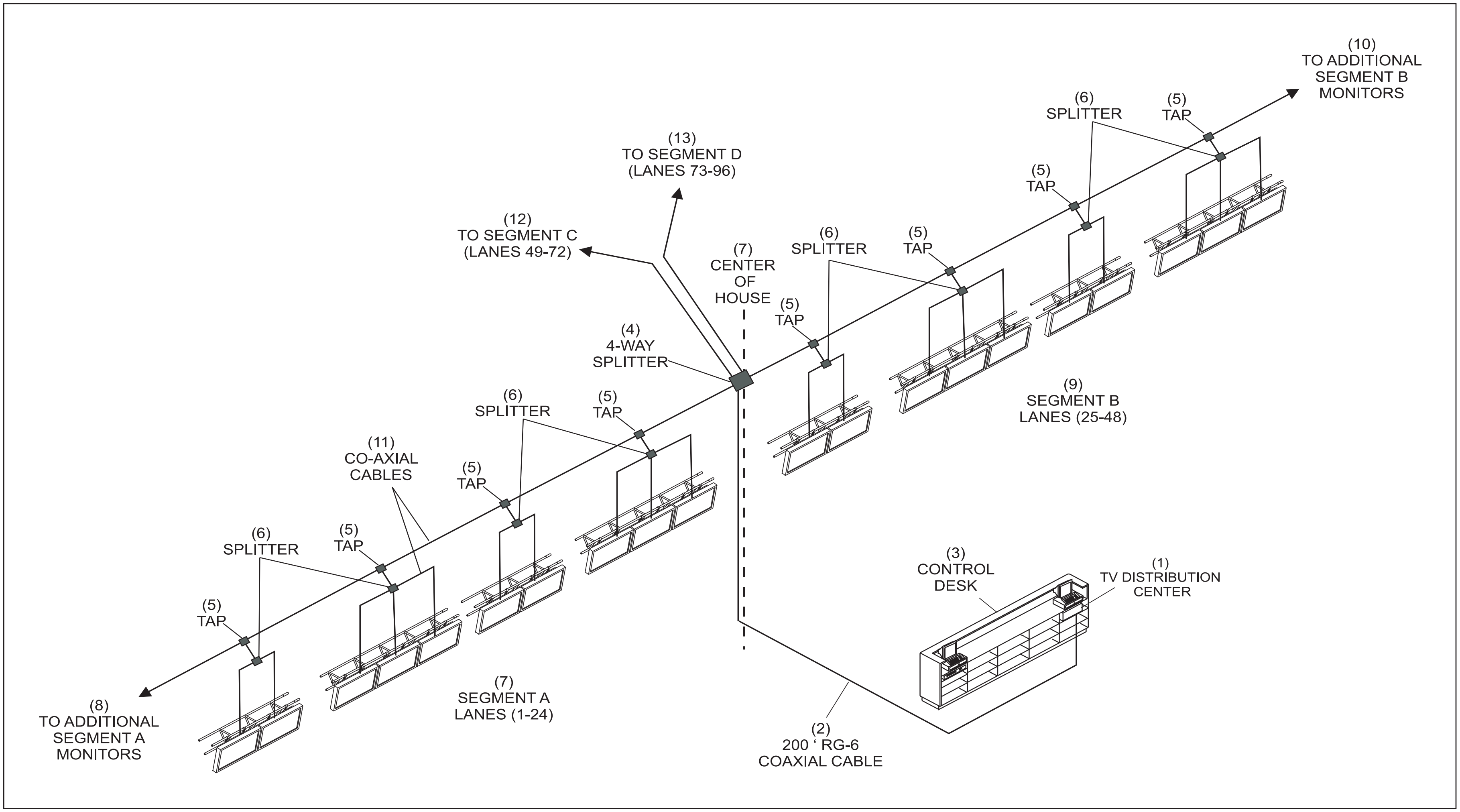
Vector-HD with LCD Touchscreen, Non-GS Pinsetters - Lane Pair Cabling

(1) 57-500275-000 SCORING COMPUTER TO LCD TOUCHSCREEN LAN CABLE
(2) 57-500827-000 SCORER COMPUTER TO LCD TOUCHSCREEN VIDEO CABLES
(3) ODD LANE TOUCHSCREEN
(4) DISPLAY CONTROLLER OVERHEAD VIDEO CABLES
(5) SCORING COMPUTER
(6) 57-300153-000 LCD TOUCHSCREEN POWER CABLE
(7) TO NEXT LANE PAIR
(8) TRIPLE LCD WIDE SCREEN OVERHEADS
(9) EVEN LANE TOUCHSCREEN
(10) 57-301110-000 GLOBAL AUDIO LANE PAIR TO LANE PAIR
(11) 57-500274-000 LANE CABLE
(12) CAMERA
(13) 57-863589-000, 57-863590-000 57-863591-000 HDMI VIDEO CABLE
(14) 27-609941-000 (57-301125-000) AUDIO - BULK CABLE FROM CONTROL DESK
(15) LCD TOUCHSCREEN POWER SUPPLY
(16) 57-500050-000 CAMERA VIDEO CABLE
(17) 57-500281-000 CAMERA DATA CABLE
(18) TEL-E-FOUL
(19) 57-500207-000 FOUL CABLE
(20) 57-500799-00X CONTROL OVERHEAD TO OVERHEAD
(21) 57-500220-000 BALL DETECT CABLE
(22) BALL DETECT 57-300659-000
(23) 57-500273-000 LANE CABLE
(24) 57-301111-000 GLOBAL AUDIO
(25) TO SCORER COMPUTER
(26) TO PERIPHERALS
(27) TO DISPLAY CONTROLLER
(28) TO OVERHEAD
(29) 57-500799-003 CONTROL CABLE TO OVERHEAD


(4) DISPLAY CONTROLLER
(25) 57-500799-003
(20) 57-500799-007 57-500799-009
(13) 57-863590-000 57-863591-000
(13) 57-863589-000
(8) TRIPLE LCD WIDE SCREEN OVERHEADS
(23) TO DISPLAY CONTROLLER
(24) 57-500799-003
(10) 57-500799-007 57-500799-009
(9) 57-863589-000 57-863590-000 57-863591-000
(24) TO OVERHEAD
(5) SCORING COMPUTER
(15)
(11) RS-232 CONVERTER 57-863244-000
(16) GS-X PINSETTER
(12) 57-500063-000
(21) TO SCORING COMPUTER
(12) 57-500063-000
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(22) TO PERIPHERALS
(3)
(9)
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(14) 27-619054-000
(10) 57-301110-000
(19) 57-500274-000
(10) 57-301110-000
(7) TO NEXT LANE PAIR
(2) 57-500360-000
(6) 57-300153-000
(3)
OR
(9)
(1) 57-500275-000
(2) 57-500827-000
(6) 57-300153-000
(14) 27-619054-000
(17) 57-500273-000
(18) 57-301111-000
(10) 57-30110-000
(1) 57-500275-000
(2) 57-500360-000
(6) 57-300153-000
(7) TO NEXT LANE PAIR

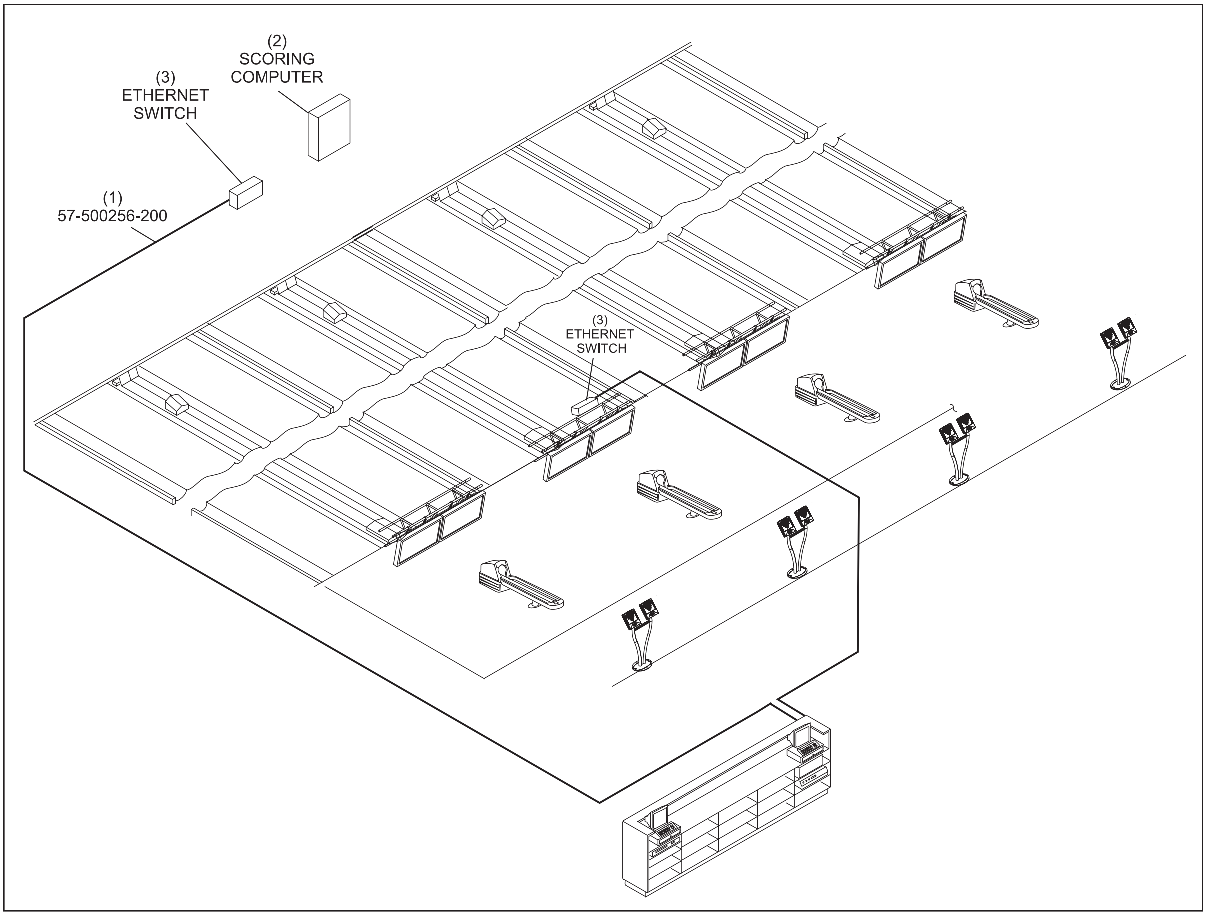
Vector-HD with LCD Touchscreen,GS-X Pinsetters - Lane Pair Cabling

(1) 57-500275-000 SCORING COMPUTER TO LCD TOUCHSCREEN LAN CABLE
(2) 57-500827-000 LCD TOUCHSCREEN VIDEO CABLES
(3) ODD LANE TOUCHSCREEN
(4) DISPLAY CONTROLLER
(5) SCORING COMPUTER
(6) 57-300153-000 LCD TOUCHSCREEN POWER CABLE
(7) TO NEXT LANE PAIR
(8) TRIPLE LCD WIDE SCREEN OVERHEADS
(9) EVEN LANE TOUCHSCREEN
(10) 57-301110-000 GLOBAL AUDIO LANE PAIR TO LANE PAIR
(11) RS-232 CONVERTER 57-863244-000
(12) 57-500063-000 GS PINSETTER RS232 CONVERTOR
(13) 57-863589-000, 57-863590-000 57-863591-000 HDMI VIDEO CABLE
(14) 27-609941-000 (57-301125-000) AUDIO - BULK CABLE FROM CONTROL DESK
(15) LCD TOUCHSCREEN POWER SUPPLY
(16) GS-X PINSETTER
(17) 57-500273-000 LANE CABLE
(18) 57-301111-000 GLOBAL AUDIO
(19) 57-500274-000 LANE CABLE
(20) 57-500799-00X CONTROL OVERHEAD TO OVERHEAD
(21) TO SCORER COMPUTER
(22) TO PERIPHERALS
(23) TO DISPLAY CONTROLLER
(24) TO OVERHEAD
(25) 57-500799-003 CONTROL TO OVERHEAD


(10)
TO ADDITIONAL
SEGMENT B
MONITORS
(6)
SPLITTER
(5)
TAP
(13)
TO SEGMENT D
(LANES 73-96)
(5)
TAP
(12)
TO SEGMENT C
(LANES 49-72)
(6)
SPLITTER
(5)
TAP
(7)
CENTER
OF
HOUSE
(5)
TAP
(4)
4-WAY
SPLITTER
(6)
SPLITTER
(5)
TAP
(9)
SEGMENT B
LANES (25-48)
(11)
CO-AXIAL
CABLES
(5)
TAP
(6)
SPLITTER
(5)
TAP
(3)
CONTROL
DESK
(1)
TV DISTRIBUTION
CENTER
(5)
TAP
(8)
TO ADDITIONAL
SEGMENT A
MONITORS
(7)
SEGMENT A
LANES (1-24)
(2)
200 ' RG-6
COAXIAL CABLE

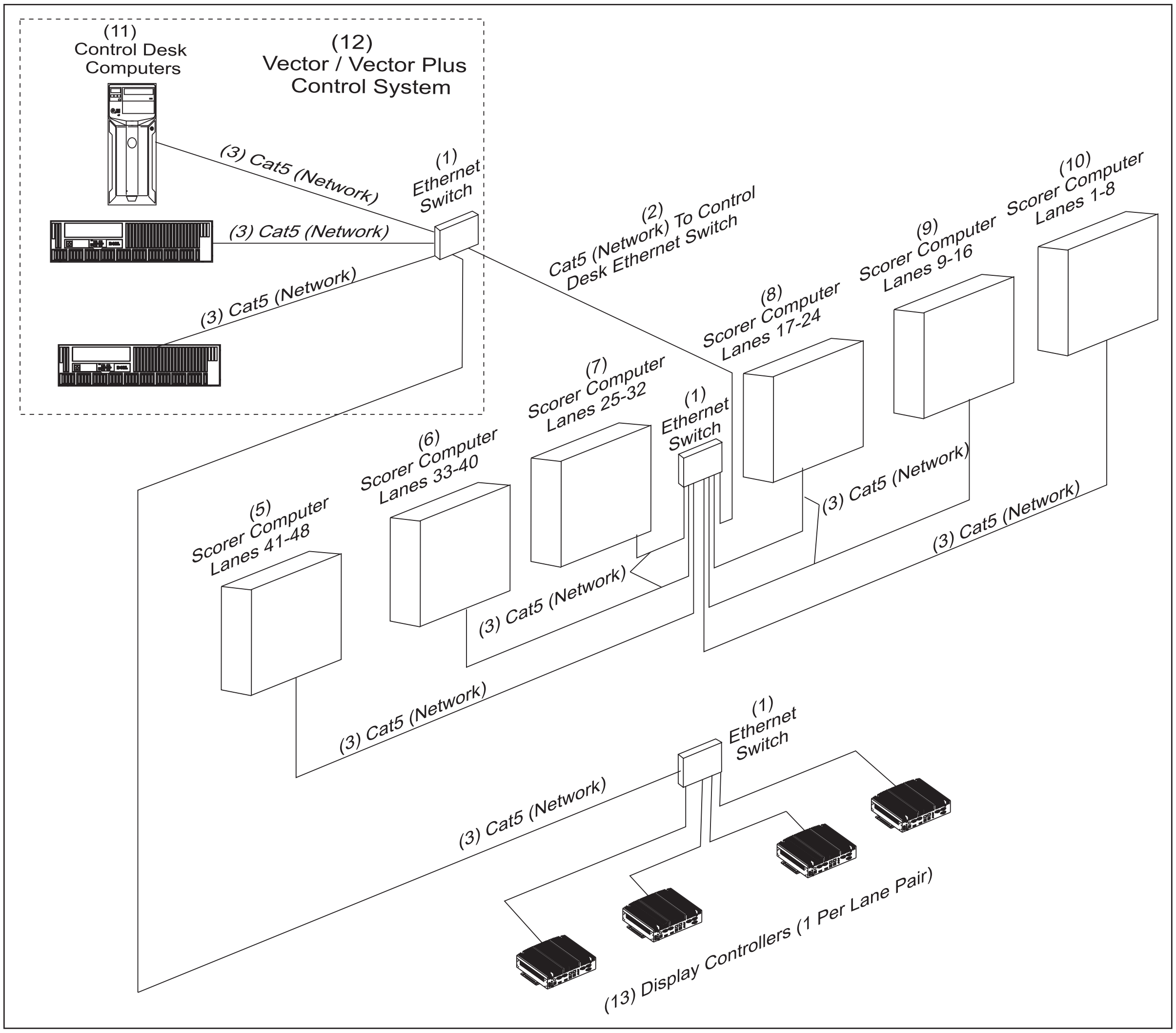
TV Video Cabling

(1)	TV DISTRIBUTION CENTER	(2)	200' RG-6 COAXIAL CABLE	(3)	CONTROL DESK	(4)	4-WAY SPLITTER
(5)	TAP	(6)	SPLITTER	(7)	CENTER OF HOUSE	(8)	TO ADDITIONAL SEGMENT A MONITORS
(9)	SEGMENT B (LANES 25-48)	(10)	TO ADDITIONAL SEGMENT B MONITORS	(11)	COAXIAL CABLES	(12)	TO SEGMENT C (LANES 49-72)
13)	TO SEGMENT D (LANES 73-96)						


(2)
SCORING
COMPUTER
(3)
ETHERNET
SWITCH
(1)
57-500256-200
(3)
ETHERNET
SWITCH

Control Desk to Ethernet Switch Cable Routing

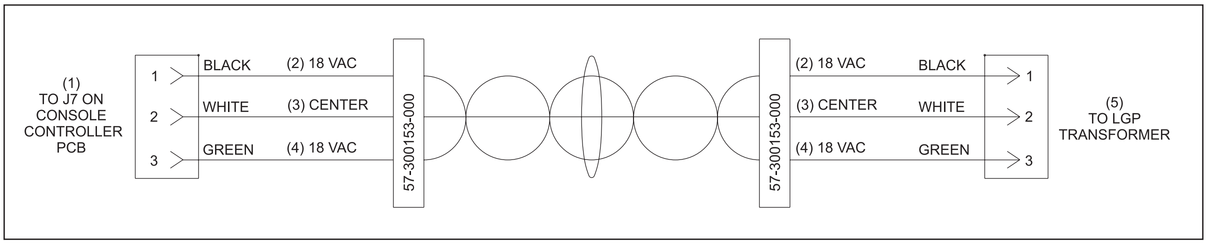
(1) 57-500256-200 ETHERNET CABLE (2) SCORING COMPUTER (8 LANES) (3) ETHERNET SWITCH


(11) Control Desk Computers
(12) Vector / Vector Plus Control System
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(2) Cat5 (Network) To Control Desk Ethernet Switch
(10) Scorer Computer Lanes 1-8
(9) Scorer Computer Lanes 9-16
(8) Scorer Computer Lanes 17-24
(7) Scorer Computer Lanes 25-32
(1) Ethernet Switch
(6) Scorer Computer Lanes 33-40
(5) Scorer Computer Lanes 41-48
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(13) Display Controllers (1 Per Lane Pair)

Scoring Computer Network 8 Lane Configuration

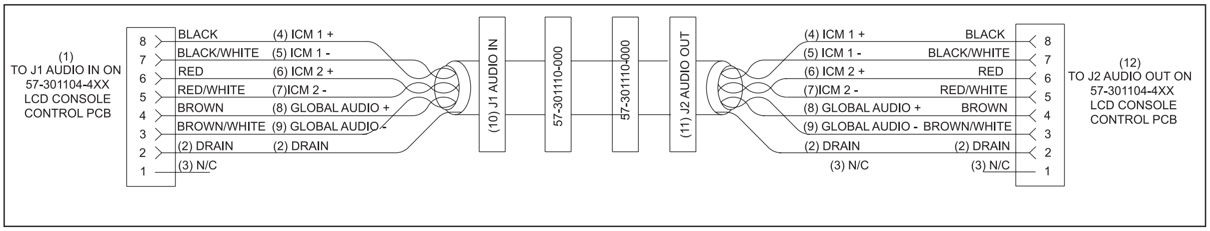
(1) SCORING COMPUTER	(2) ETHERNET SWITCH	(3) 57-500256-007 ETHERNET CABLE (7’)
(4) 57-500256-050 ETHERNET CABLE (50’)	(5) 57-500256-100 ETHERNET CABLE (100’)	(6) 57-500256-150 ETHERNET CABLE (150’)
(7) TO CONTROL DESK 57-500256-200 (200’)	(8) LANES 49-56	(9) LANES 41-48
(10) LANES 33-40	(11) LANES 25-32	(12) LANES 17-24
(13) LANES 9-16	(14) LANES 1-8	(15) 8 LANES PER CENTER

CABLE DIAGRAMS


(1)
TO J7 ON
CONSOLE
CONTROLLER
PCB
1
2
3
BLACK
WHITE
GREEN
(2) 18 VAC
(3) CENTER
(4) 18 VAC
57-300153-000
57-300153-000
(2) 18 VAC
(3) CENTER
(4) 18 VAC
BLACK
WHITE
GREEN
1
2
3
(5)
TO LGP
TRANSFORMER

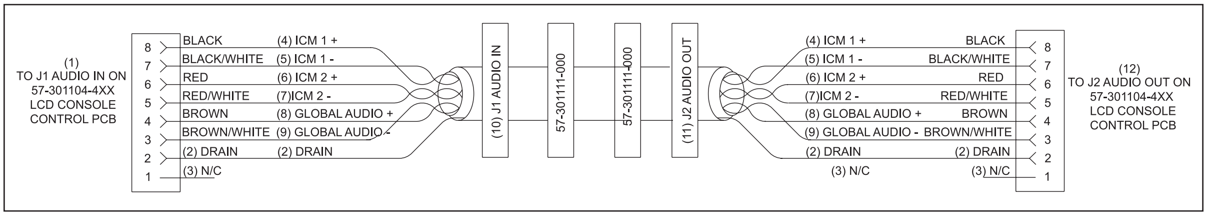
LCD Touchscreen Power Cable (Part No. 57-300153-000)

(1) TO J7 ON CONSOLE CONTROLLER PCB
(2) 18 VOLTS ALTERNATING CURRENT
(3) CENTER
(4) 18 VOLTS ALTERNATING CURRENT
(5) TO LGP TRANSFORMER


(1)
TO J1 AUDIO IN ON
57-301104-4XX
LCD CONSOLE
CONTROL PCB
8
7
6
5
4
3
2
1
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) DRAIN
(3) N/C
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7)ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO -
(2) DRAIN
(10) J1 AUDIO IN
57-301110-000
57-301110-000
(11) J2 AUDIO OUT
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7)ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO -
(2) DRAIN
(3) N/C
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) DRAIN
(3) N/C
8
7
6
5
4
3
2
1
(12)
TO J2 AUDIO OUT ON
57-301104-4XX
LCD CONSOLE
CONTROL PCB

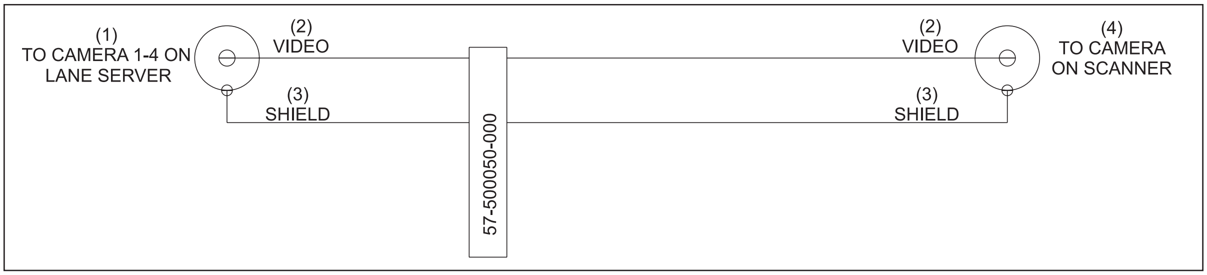
Global Audio lane to Lane Cable (Part No. 57-301110-000)

(1) TO J1 AUDIO IN ON 57-301104-000 LCD CONSOLE CONTROL PCB
(2) DRAIN
(3) NO CONNECTION
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7) ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO-
(10) J1 AUDIO IN
(11) J2 AUDIO OUT
(12) TO J2 AUDIO OUT ON 57-301104-4XX LCD CONSOLE CONTROL PCB


(1)
TO J1 AUDIO IN ON
57-301104-4XX
LCD CONSOLE
CONTROL PCB
8
7
6
5
4
3
2
1
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) DRAIN
(3) N/C
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7)ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO -
(2) DRAIN
(10) J1 AUDIO IN
57-301111-000
57-301111-000
(11) J2 AUDIO OUT
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7)ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO -
(2) DRAIN
(3) N/C
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) DRAIN
(3) N/C
8
7
6
5
4
3
2
1
(12)
TO J2 AUDIO OUT ON
57-301104-4XX
LCD CONSOLE
CONTROL PCB

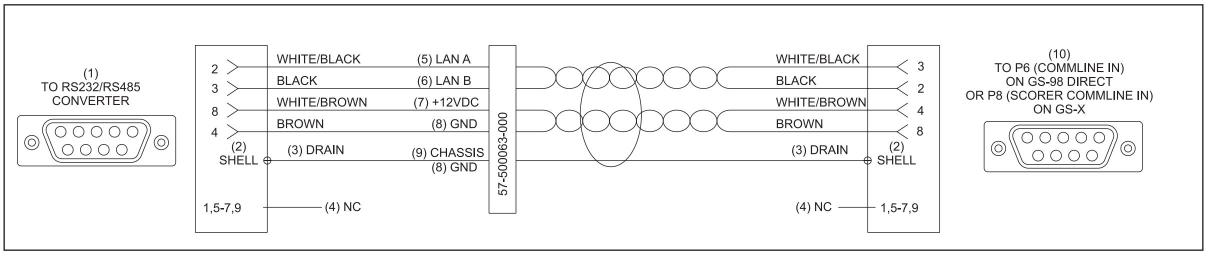
Global Audio Odd to Even Cable - Pedestal Mount (Part No. 57-301111-000)

(1) TO J1 AUDIO IN ON 57-301104-000 LCD CONSOLE CONTROL PCB
(2) DRAIN
(3) NO CONNECTION
(4) ICM 1 +
(5) ICM 1 -
(6) ICM 2 +
(7) ICM 2 -
(8) GLOBAL AUDIO +
(9) GLOBAL AUDIO-
(10) J1 AUDIO IN
(11) J2 AUDIO OUT
(12) TO J2 AUDIO OUT ON LCD CONSOLE CONTROL PCB


(1)
TO CAMERA 1-4 ON
LANE SERVER
(2)
VIDEO
(3)
SHIELD
57-500050-000
(2)
VIDEO
(3)
SHIELD
(4)
TO CAMERA
ON SCANNER

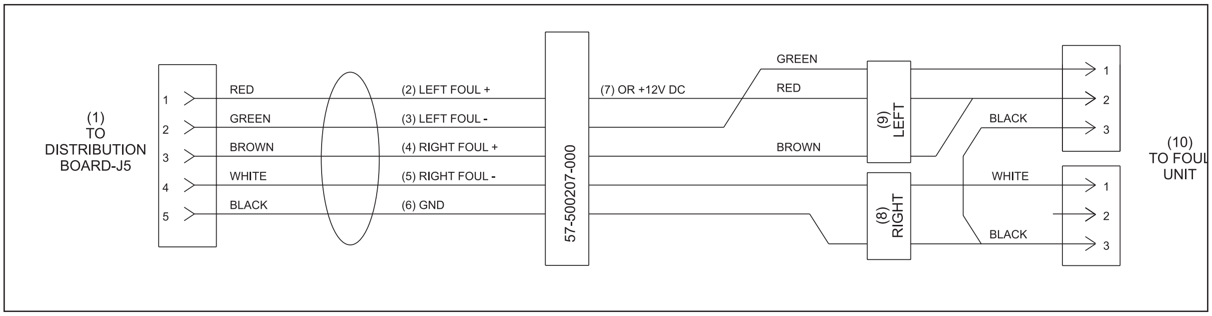
Camera Video Cable (Part No. 57-500050-000)

(1) TO CAMERA 1-4 ON LANE SERVER (2) VIDEO (3) SHIELD
(4) TO CAMERA ON SCANNER


(1)
TO RS232/RS485
CONVERTER
2
3
8
4
(2)
SHELL
1,5-7,9
WHITE/BLACK
BLACK
WHITE/BROWN
BROWN
(3) DRAIN
(4) NC
(5) LAN A
(6) LAN B
(7) +12VDC
(8) GND
(9) CHASSIS
(8) GND
57-500063-000
WHITE/BLACK
BLACK
WHITE/BROWN
BROWN
(3) DRAIN
(4) NC
3
2
4
8
(2)
SHELL
1,5-7,9
(10)
TO P6 (COMMLINE IN)
ON GS-98 DIRECT
OR P8 (SCORER COMMLINE IN)
ON GS-X

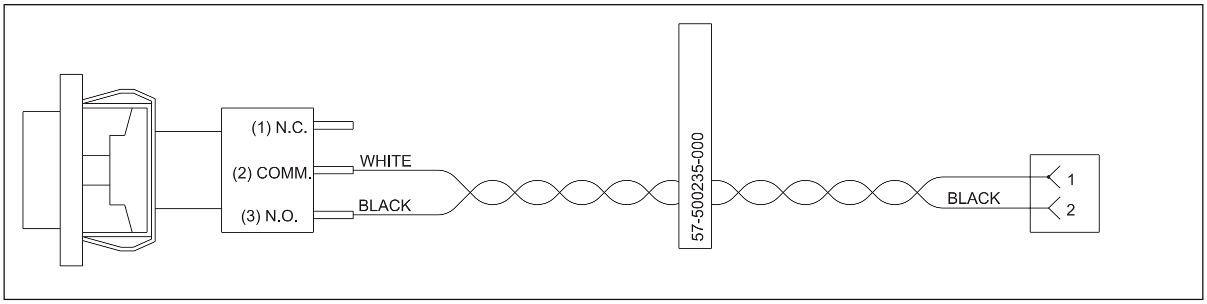
GS-Pinsetter RS232/485 Cable (Part No. 57-500063-000)

(1) TO RS232/485 CONVERTER (2) SHELL (3) DRAIN
(4) NO CONNECTION (5) LAN A (6) LAN B
(7) +12 VOLTS DIRECT CURRENT (8) GROUND (9) CHASSIS
(10) TO P8 (COMLINE IN) ON GS-98 DIRECT OR P8 (SCORER COMLINE IN) ON GS-X


(1)
TO
DISTRIBUTION
BOARD-J5
1
2
3
4
5
RED
GREEN
BROWN
WHITE
BLACK
(2) LEFT FOUL +
(3) LEFT FOUL -
(4) RIGHT FOUL +
(5) RIGHT FOUL -
(6) GND
57-500207-000
(7) OR +12V DC
GREEN
RED
BROWN
(9)
LEFT
(8)
RIGHT
BLACK
WHITE
BLACK
1
2
3
1
2
3
(10)
TO FOUL
UNIT

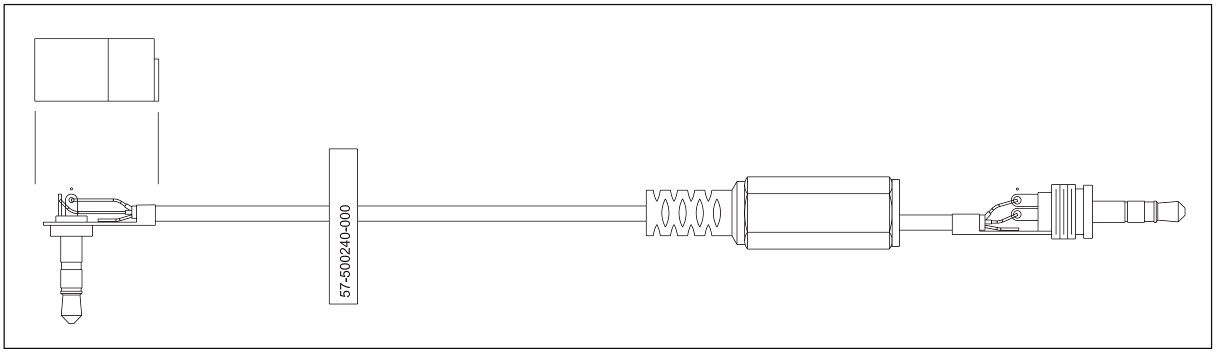
Foul Cable (Part No. 57-500207-000)

(1) TO DISTRIBUTION BOARD J5 (2) LEFT FOUL + (3) LEFT FOUL -
(4) RIGHT FOUL + (5) RIGHT FOUL - (6) GROUND
(7) OR +12 VOLTS DIRECT CURRENT(8) RIGHT (9) LEFT
(10) TO FOUL UNIT

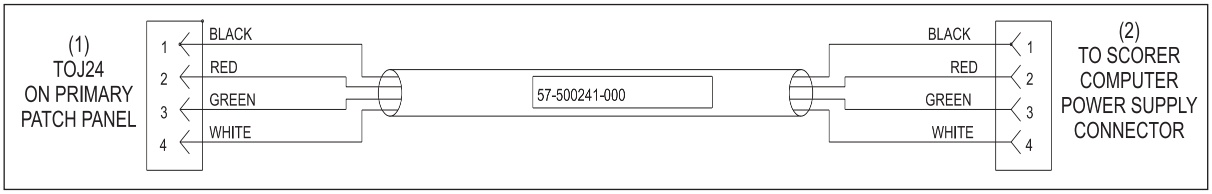

(1) N.C.
(2) COMM.
(3) N.O.
WHITE
BLACK
57-500235-000
BLACK
1
2

Power Control Cable (Part No. 57-500235-000)

(1) NO CONNECTION (2) COMM (3) NORMALLY OPEN

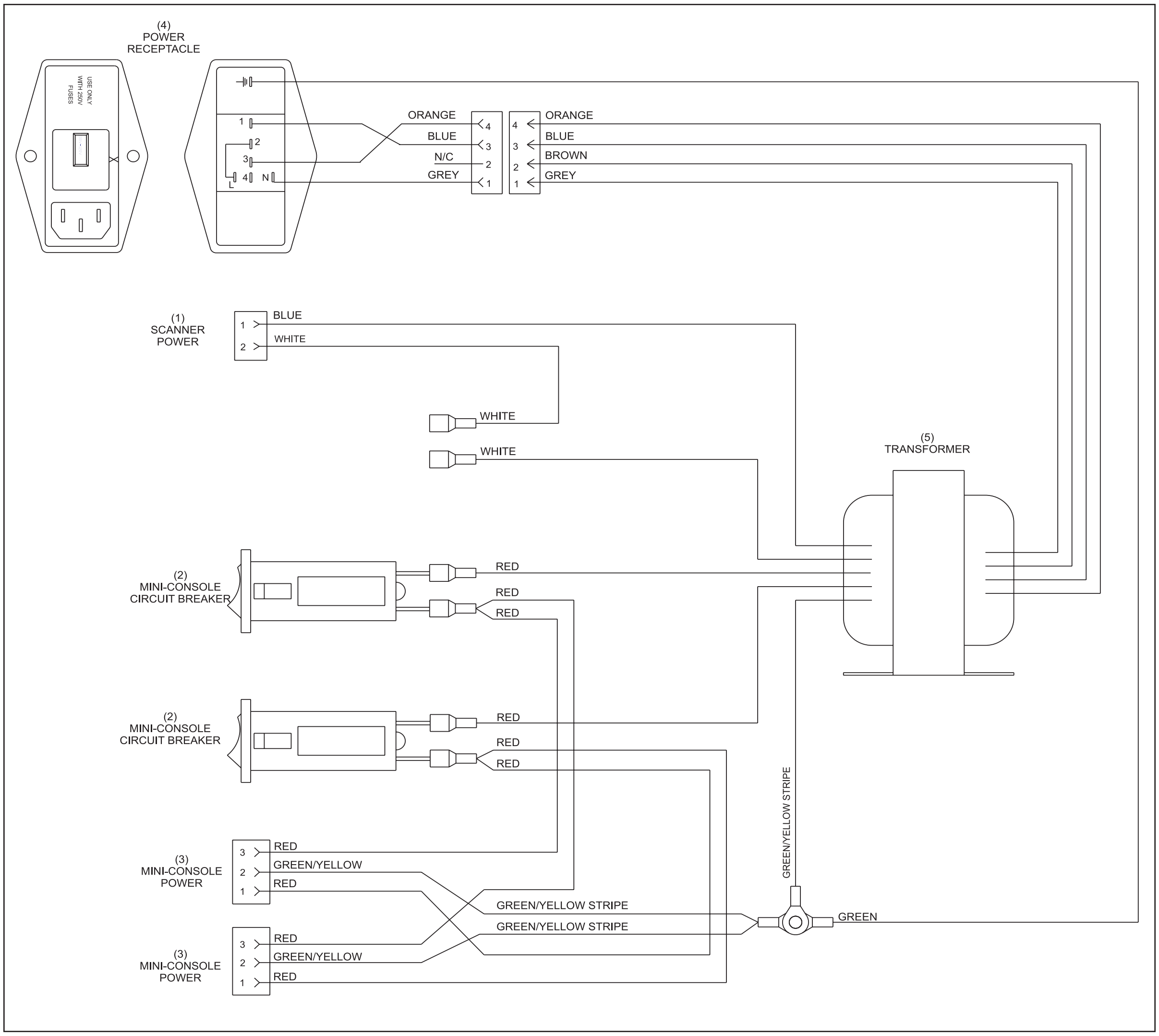

57-500240-000

Audio Cable (Part No. 57-500240-000)


(1)
TOJ24
ON PRIMARY
PATCH PANEL
1
2
3
4
BLACK
RED
GREEN
WHITE
57-500241-000
BLACK
RED
GREEN
WHITE
1
2
3
4
(2)
TO SCORER
COMPUTER
POWER SUPPLY
CONNECTOR

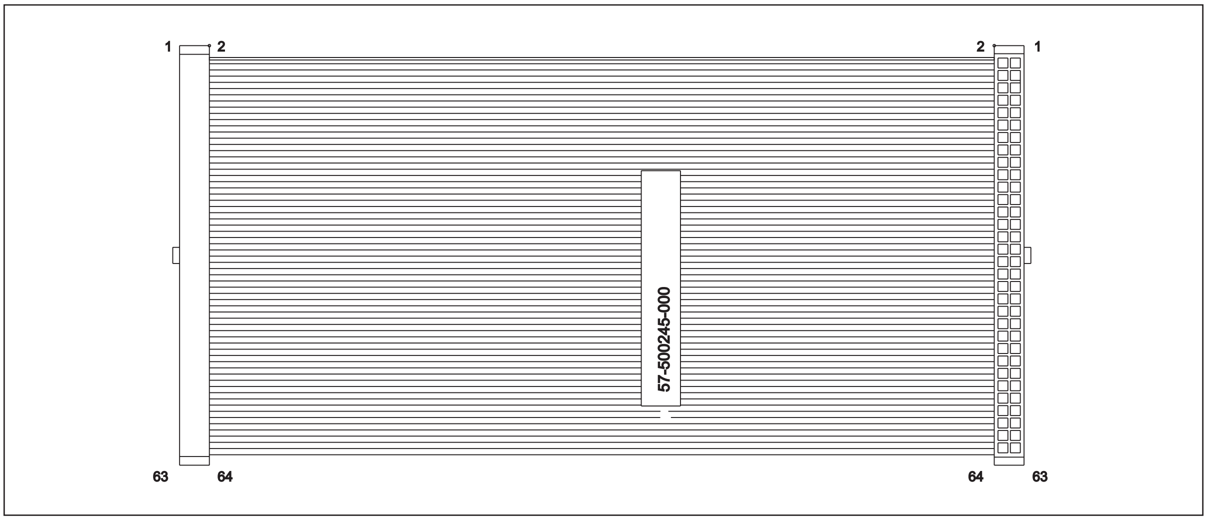
Primary Patch Panel PCB Power Cable (Part No. 57-500241-000)

(1) TO J24 ON PRIMARY PATCH PANEL (2) TO SCORER COMPUTER POWER SUPPLY CONNECTOR

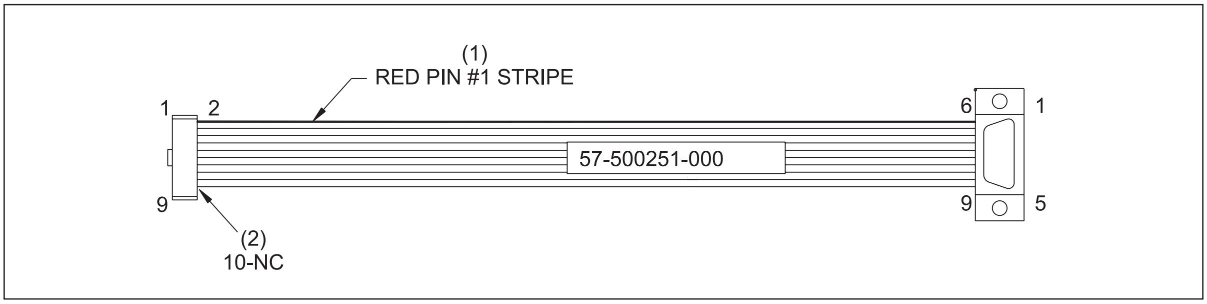

(4)
POWER
RECEPTACLE
USE ONLY WITH 250V FUSES
1
2
3
4
L
N
ORANGE
BLUE
N/C
GREY
4
3
2
1
4
3
2
1
ORANGE
BLUE
BROWN
GREY
(1)
SCANNER
POWER
1
2
BLUE
WHITE
WHITE
WHITE
(5)
TRANSFORMER
(2)
MINI-CONSOLE
CIRCUIT BREAKER
RED
RED
RED
(2)
MINI-CONSOLE
CIRCUIT BREAKER
RED
RED
RED
GREEN/YELLOW STRIPE
(3)
MINI-CONSOLE
POWER
3
2
1
RED
GREEN/YELLOW
RED
GREEN/YELLOW STRIPE
GREEN/YELLOW STRIPE
GREEN
(3)
MINI-CONSOLE
POWER
3
2
1
RED
GREEN/YELLOW
RED

LCD Touchscreen Transformer (Part No. 57-500242-000)

(1) SCANNER POWER
(2) MINI-CONSOLE CIRCUIT BREAKER
(3) MINI-CONSOLE POWER
(4) POWER RECEPTACLE
(5) TRANSFORMER

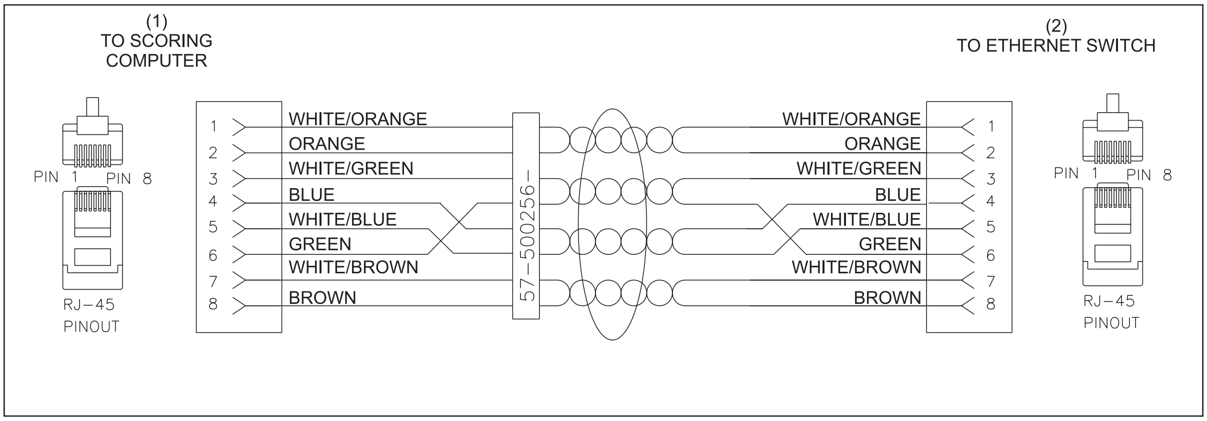

1
2
2
1
57-500245-000
63
64
64
63

Overhead Video Ribbon Cable (Part No. 57-500245-000)


(1)
RED PIN #1 STRIPE
1
2
9
(2)
10-NC
57-500251-000
6
1
9
5

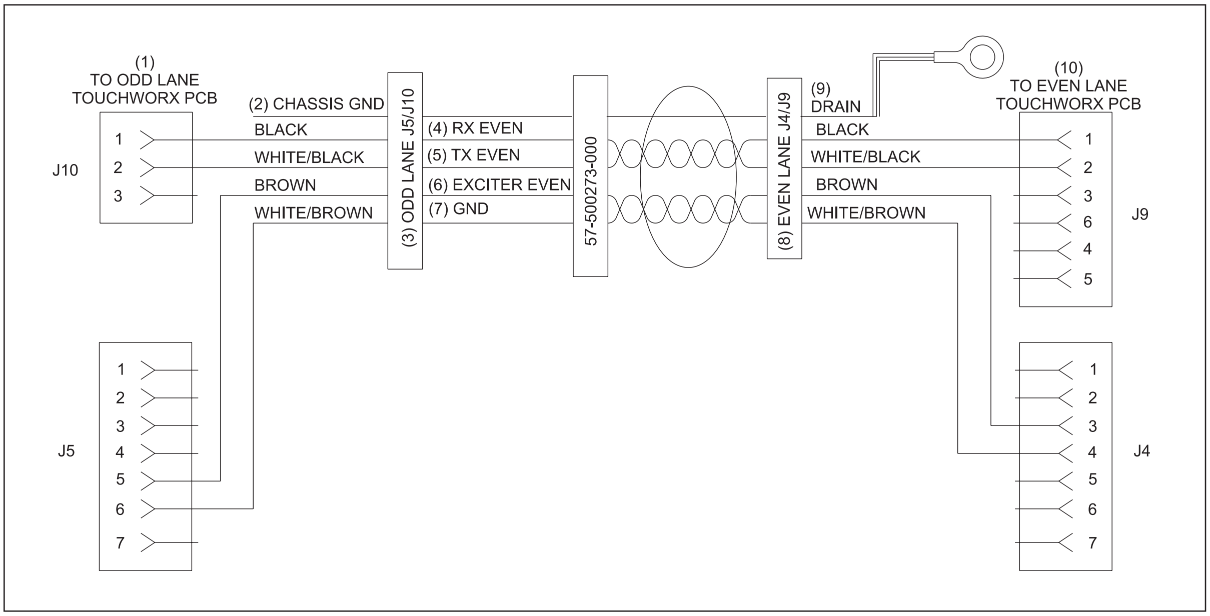
COM1/COM2 Ribbon Cable (Part No. 57-500251-000)

(1) RED STRIPE PIN #1 (2) 10 - NO CONNECTION


(1)
TO SCORING
COMPUTER
PIN 1
PIN 8
RJ-45
PINOUT
1
2
3
4
5
6
7
8
WHITE/ORANGE
ORANGE
WHITE/GREEN
BLUE
WHITE/BLUE
GREEN
WHITE/BROWN
BROWN
57-500256-
(2)
TO ETHERNET SWITCH
WHITE/ORANGE
ORANGE
WHITE/GREEN
BLUE
WHITE/BLUE
GREEN
WHITE/BROWN
BROWN
1
2
3
4
5
6
7
8
PIN 1
PIN 8
RJ-45
PINOUT

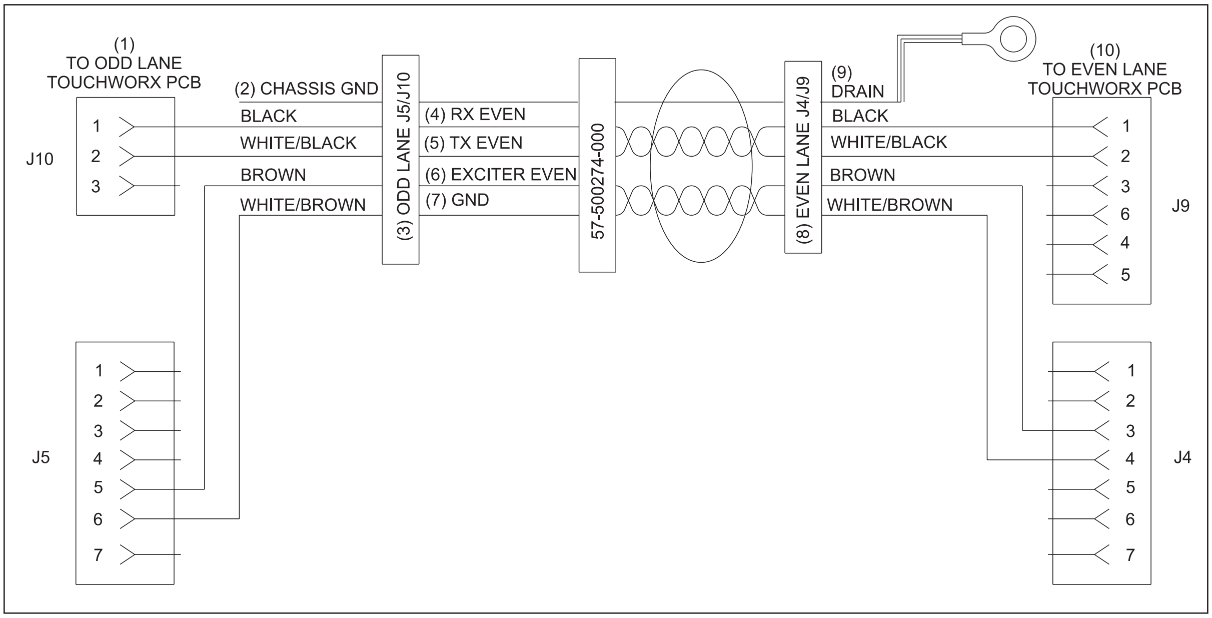
Ethernet Cable / CAT5e Cable (Part No. 57-500256-xxx)

(1) TO SCORING COMPUTER (2) TO ETHERNET SWITCH


(1)
TO ODD LANE
TOUCHWORX PCB
J10
1
2
3
(2) CHASSIS GND
BLACK
WHITE/BLACK
BROWN
WHITE/BROWN
(3) ODD LANE J5/J10
(4) RX EVEN
(5) TX EVEN
(6) EXCITER EVEN
(7) GND
57-500273-000
(8) EVEN LANE J4/J9
(9)
DRAIN
BLACK
WHITE/BLACK
BROWN
WHITE/BROWN
(10)
TO EVEN LANE
TOUCHWORX PCB
1
2
3
6
4
5
J9
J5
1
2
3
4
5
6
7
J4
1
2
3
4
5
6
7

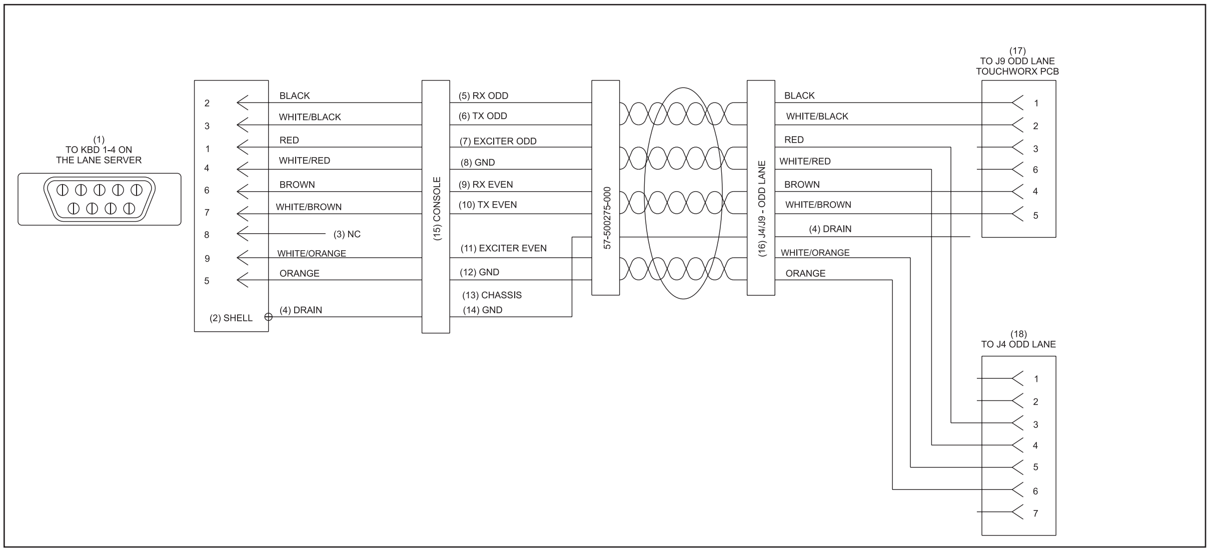
LAN Cable Odd Even Lane - Touchscreen Pedestal Mount (Part No. 57-500273-000)

(1) TO ODD LANE TOUCHWORX PCB (2) CHASSIS GROUND (3) ODD LANE J5/J10
(4) RX EVEN (5) TX EVEN (6) EXCITER EVEN
(7) GROUND (8) EVEN LANE J /J9 (10) TO EVEN LANE TOUCHWORX PCB


(1)
TO ODD LANE
TOUCHWORX PCB
J10
1
2
3
(2) CHASSIS GND
BLACK
WHITE/BLACK
BROWN
WHITE/BROWN
(3) ODD LANE J5/J10
(4) RX EVEN
(5) TX EVEN
(6) EXCITER EVEN
(7) GND
57-500274-000
(8) EVEN LANE J4/J9
(9)
DRAIN
BLACK
WHITE/BLACK
BROWN
WHITE/BROWN
(10)
TO EVEN LANE
TOUCHWORX PCB
J9
1
2
3
6
4
5
J5
1
2
3
4
5
6
7
J4
1
2
3
4
5
6
7

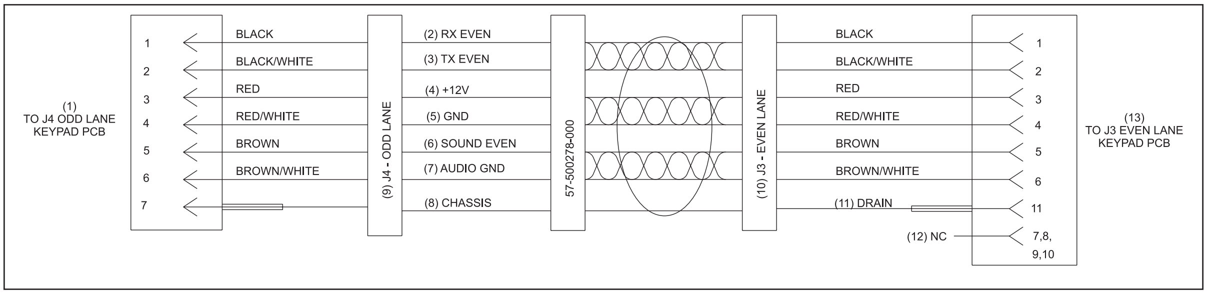
LAN Cable Odd Even Lane - Table Mount (Part No. 57-500274-000)

(1) TO ODD LANE TOUCHWORX PCB
(2) CHASSIS GROUND
(3) ODD LANE J5/J10
(4) RX EVEN
(5) TX EVEN
(6) EXCITER EVEN
(7) GROUND
(8) EVEN LANE J /J9
(10) TO EVEN LANE TOUCHWORX PCB


(1)
TO KBD 1-4 ON
THE LANE SERVER
2
3
1
4
6
7
8
9
5
(2) SHELL
BLACK
WHITE/BLACK
RED
WHITE/RED
BROWN
WHITE/BROWN
(3) NC
WHITE/ORANGE
ORANGE
(4) DRAIN
(15) CONSOLE
(5) RX ODD
(6) TX ODD
(7) EXCITER ODD
(8) GND
(9) RX EVEN
(10) TX EVEN
(11) EXCITER EVEN
(12) GND
(13) CHASSIS
(14) GND
57-500275-000
(16) J4/J9 - ODD LANE
BLACK
WHITE/BLACK
RED
WHITE/RED
BROWN
WHITE/BROWN
(4) DRAIN
WHITE/ORANGE
ORANGE
(17)
TO J9 ODD LANE
TOUCHWORX PCB
1
2
3
6
4
5
(18)
TO J4 ODD LANE
1
2
3
4
5
6
7

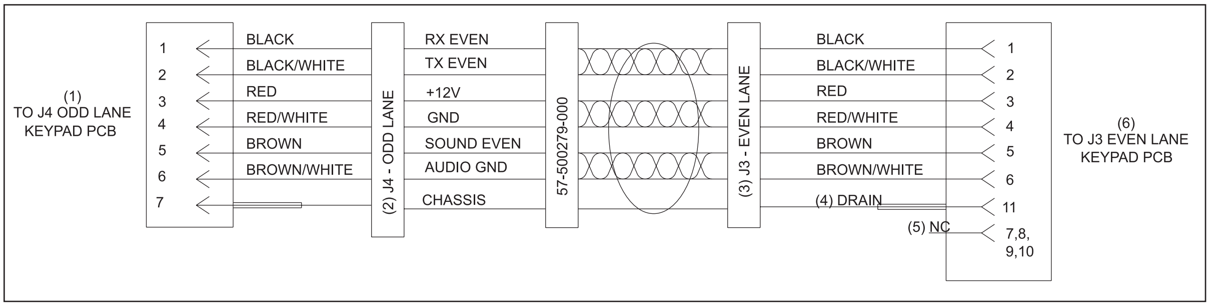
Scorer Computer to Odd Lane LCD LAN Cable (Part No. 57-500275-000)

(1) TO KBD14 ON LANE SERVER
(2) SHELL
(3) NO CONNECTION
(4) DRAIN
(5) RX ODD
(6) TX ODD
(7) EXCITER ODD
(8) GROUND
(9) RX EVEN
(10) TX EVEN
(11) EXCITER EVEN
(12) GROUND
(13) CHASSIS
(14) GROUND
(15) CONSOLE
(16) J4/J9 - ODD LANE
(17) TO J9 ODD LANE TOUCHWORX PCB
(18) TO J4 ODD LANE


(1) TO J4 ODD LANE KEYPAD PCB
1
2
3
4
5
6
7
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(9) J4 - ODD LANE
(2) RX EVEN
(3) TX EVEN
(4) +12V
(5) GND
(6) SOUND EVEN
(7) AUDIO GND
(8) CHASSIS
57-500278-000
(10) J3 - EVEN LANE
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(11) DRAIN
(12) NC
1
2
3
4
5
6
11
7,8, 9,10
(13) TO J3 EVEN LANE KEYPAD PCB

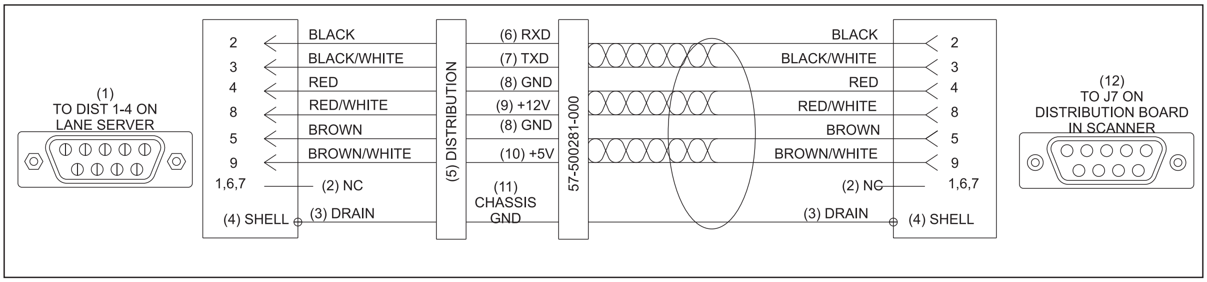
LAN Cable Odd to Even Lane- Pedestal Keypad Mount (Part No. 57-500278-000)

(1) TO J4 ODD LANE KEYPAD PCB
(2) RX EVEN
(3) TX EVEN
(4) + 12 VOLTS
(5) GROUND
(6) SOUND EVEN
(7) AUDIO GROUND
(8) CHASSIS
(9) J4 ODD LANE
(10) J3 EVEN LANE
(11) DRAIN
(12) NO CONNECTION
(13) TO J3 EVEN LANE KEYPAD PCB


(1) TO J4 ODD LANE KEYPAD PCB
1
2
3
4
5
6
7
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) J4 - ODD LANE
RX EVEN
TX EVEN
+12V
GND
SOUND EVEN
AUDIO GND
CHASSIS
57-500279-000
(3) J3 - EVEN LANE
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(4) DRAIN
(5) NC
1
2
3
4
5
6
11
7,8, 9,10
(6) TO J3 EVEN LANE KEYPAD PCB

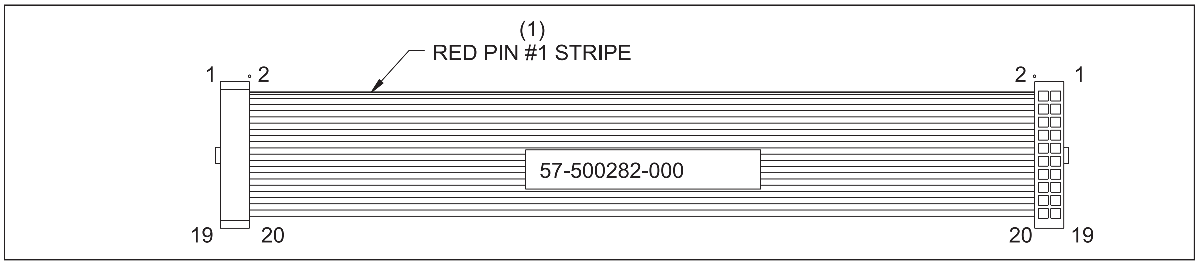
LAN Cable Odd to Even Lane Cable - Keypad Table Mount (Part No. 57-500279-000)

(1) TO J4 ODD LANE KEYPAD PCB
(2) J4 - ODD LANE
(3) J3 EVEN LANE
(4) DRAIN
(5) NO CONNECTION
(6) TO J3 EVEN LANE KEYPAD PCB

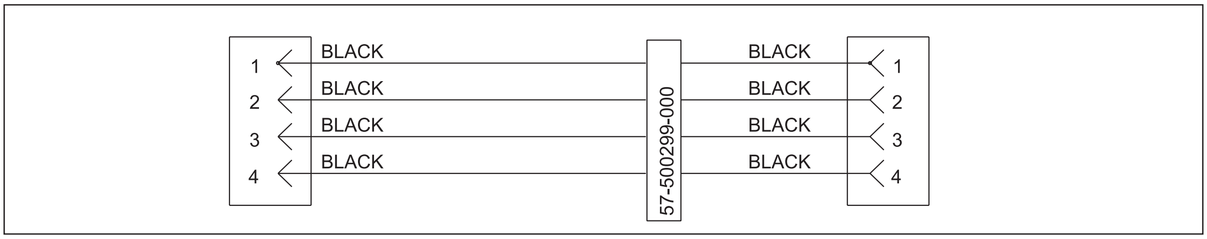

(1) TO DIST 1-4 ON LANE SERVER
2
3
4
8
5
9
1,6,7
(4) SHELL
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) NC
(3) DRAIN
(5) DISTRIBUTION
(6) RXD
(7) TXD
(8) GND
(9) +12V
(8) GND
(10) +5V
(11) CHASSIS GND
57-500281-000
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) NC
(3) DRAIN
2
3
4
8
5
9
1,6,7
(4) SHELL
(12) TO J7 ON DISTRIBUTION BOARD IN SCANNER

Camera Data Cable (Part No. 57-500281-000)

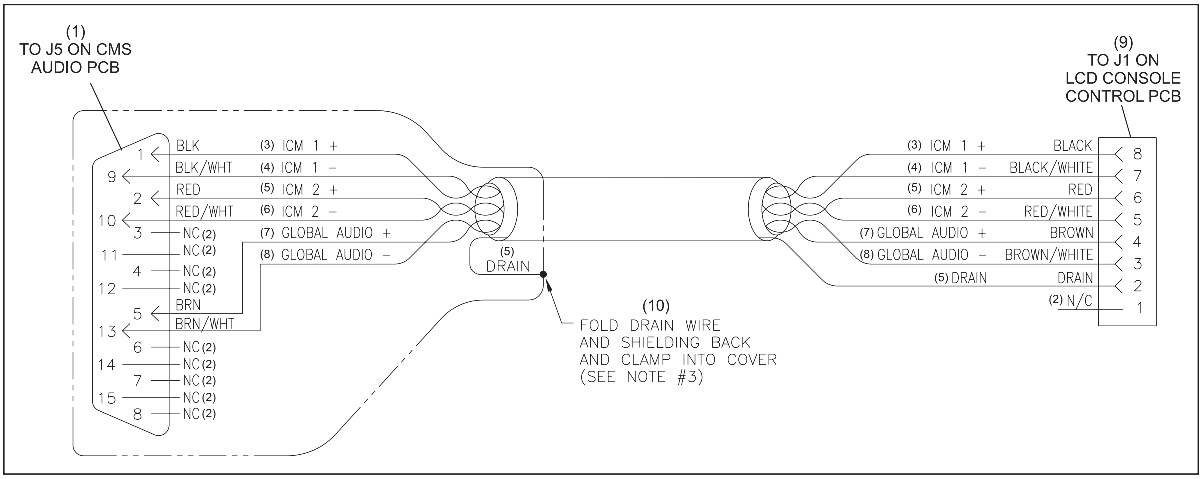
(1) TO DIST. 1-4 ON LANE SERVER
(2) NO CONNECTION
(3) DRAIN
(4) SHELL
(5) DISTRIBUTION
(6) RXD
(7) TXD
(8) GROUND
(9) + 12 VOLTS
(10) + 5 VOLTS
(11) CHASSIS GROUND
(12) TO J7 ON DISTRIBUTION BOARD IN SCANNER


(1) RED PIN #1 STRIPE
1
2
19
20
57-500282-000
2
1
20
19

Primary Patch Panel to Video3 PCB Ribbon Cable (Part No. 57-500282-000)

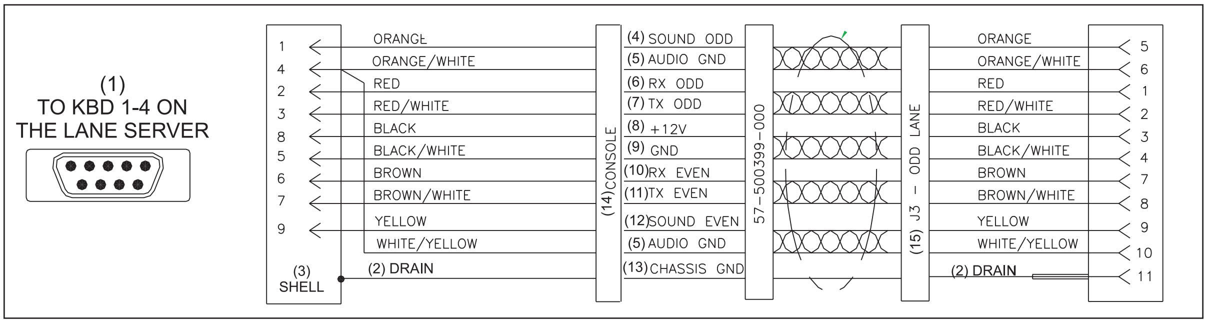

1
2
3
4
BLACK
BLACK
BLACK
BLACK
57-500299-000
BLACK
BLACK
BLACK
BLACK
1
2
3
4

Power Cable (Part No. 57-500299-000)


(1)
TO J5 ON CMS
AUDIO PCB
1 BLK (3) ICM 1 +
9 BLK/WHT (4) ICM 1 −
2 RED (5) ICM 2 +
10 RED/WHT (6) ICM 2 −
3 NC (2) (7) GLOBAL AUDIO +
11 NC (2) (8) GLOBAL AUDIO −
4 NC (2)
12 NC (2)
5 BRN
13 BRN/WHT
6 NC (2)
14 NC (2)
7 NC (2)
15 NC (2)
8 NC (2)
(5)
DRAIN
(10)
FOLD DRAIN WIRE
AND SHIELDING BACK
AND CLAMP INTO COVER
(SEE NOTE #3)
(9)
TO J1 ON
LCD CONSOLE
CONTROL PCB
(3) ICM 1 + BLACK 8
(4) ICM 1 − BLACK/WHITE 7
(5) ICM 2 + RED 6
(6) ICM 2 − RED/WHITE 5
(7) GLOBAL AUDIO + BROWN 4
(8) GLOBAL AUDIO − BROWN/WHITE 3
(5) DRAIN DRAIN 2
(2) N/C 1

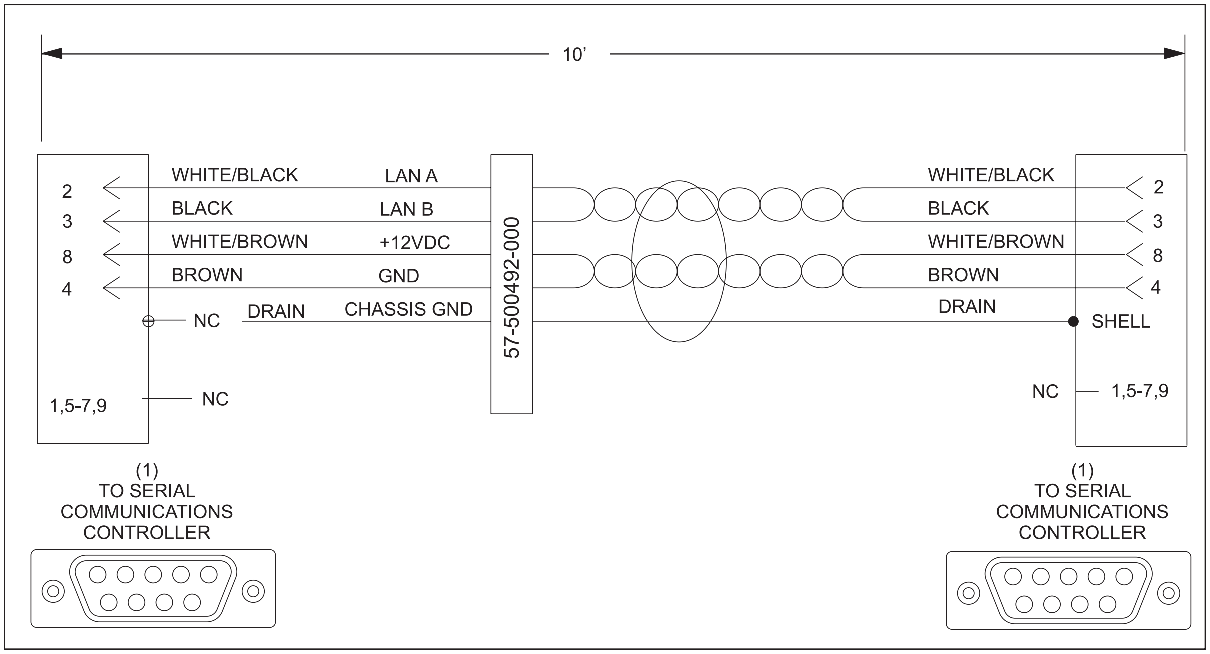
Global Control Desk to First Scorer Audio (Part No. 57-301125-000)

(1) TO J5 ON CMS AUDIO PCB
(2) NO CONNECTION
(3) INTERCOM 1 +
(4) INTERCOM 1 -
(5) INTERCOM 2+
(6) INTERCOM 2-
(7) GLOBAL AUDIO +
(8) GLOBAL AUDIO -
CONTROL PCB
(9) TO JI ON LCD CONSOLE
(10) FOLD DRAIN WIRE AND SHIELDING BACK
AND CLAMP INTO COVER (SEE NOTE 3)


(1)
TO KBD 1-4 ON
THE LANE SERVER
1 ORANGE
4 ORANGE/WHITE
2 RED
3 RED/WHITE
8 BLACK
5 BLACK/WHITE
6 BROWN
7 BROWN/WHITE
9 YELLOW
WHITE/YELLOW
(3)
SHELL
(2) DRAIN
(14) CONSOLE
(4) SOUND ODD
(5) AUDIO GND
(6) RX ODD
(7) TX ODD
(8) +12V
(9) GND
(10) RX EVEN
(11) TX EVEN
(12) SOUND EVEN
(5) AUDIO GND
(13) CHASSIS GND
57-500399-000
(15) J3 - ODD LANE
ORANGE 5
ORANGE/WHITE 6
RED 1
RED/WHITE 2
BLACK 3
BLACK/WHITE 4
BROWN 7
BROWN/WHITE 8
YELLOW 9
WHITE/YELLOW 10
(2) DRAIN 11

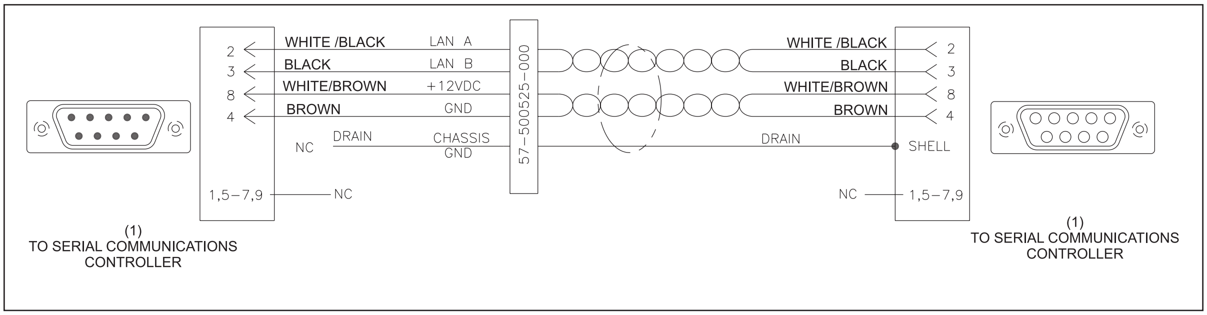
LAN, Scorer Computer to Keypad with Audio Cable (Part No. 57-500399-000)

(1) TO KBD 1-4 ON LANE SERVER
(2) DRAIN
(3) SHELL
(4) SOUND ODD
(5) AUDIO GROUND
(6) RX ODD
(7) TX ODD
(8) +12 VOLTS
(9) GROUND
(10) RX EVEN
(11) TX EVEN
(12) SOUND EVEN
(13) CHASSIS GROUND
(14) CONSOLE
(15) J3-ODD LANE


10’
2
3
8
4
WHITE/BLACK
BLACK
WHITE/BROWN
BROWN
LAN A
LAN B
+12VDC
GND
NC
DRAIN
CHASSIS GND
1,5-7,9
NC
57-500492-000
WHITE/BLACK
BLACK
WHITE/BROWN
BROWN
DRAIN
2
3
8
4
SHELL
NC
1,5-7,9
(1)
TO SERIAL
COMMUNICATIONS
CONTROLLER
(1)
TO SERIAL
COMMUNICATIONS
CONTROLLER

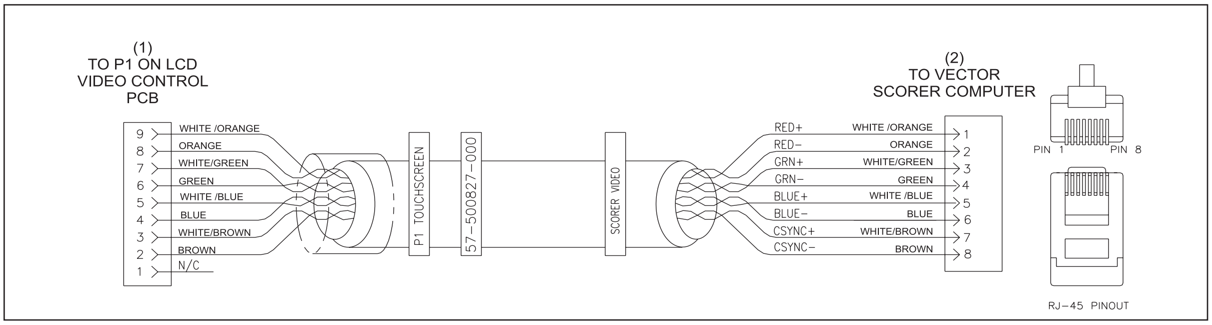
LCD Wide Screen Overhead to LCD Wide Screen Overhead Serial Control Cable (Part No. 57-500492-000)

(1) TO SERIAL COMMUNICATIONS
CONTROLLER


2
3
8
4
WHITE /BLACK
BLACK
WHITE/BROWN
BROWN
LAN A
LAN B
+12VDC
GND
NC
DRAIN
CHASSIS
GND
1,5-7,9
NC
57-500525-000
WHITE /BLACK
BLACK
WHITE/BROWN
BROWN
DRAIN
2
3
8
4
SHELL
NC
1,5-7,9
(1)
TO SERIAL COMMUNICATIONS
CONTROLLER
(1)
TO SERIAL COMMUNICATIONS
CONTROLLER

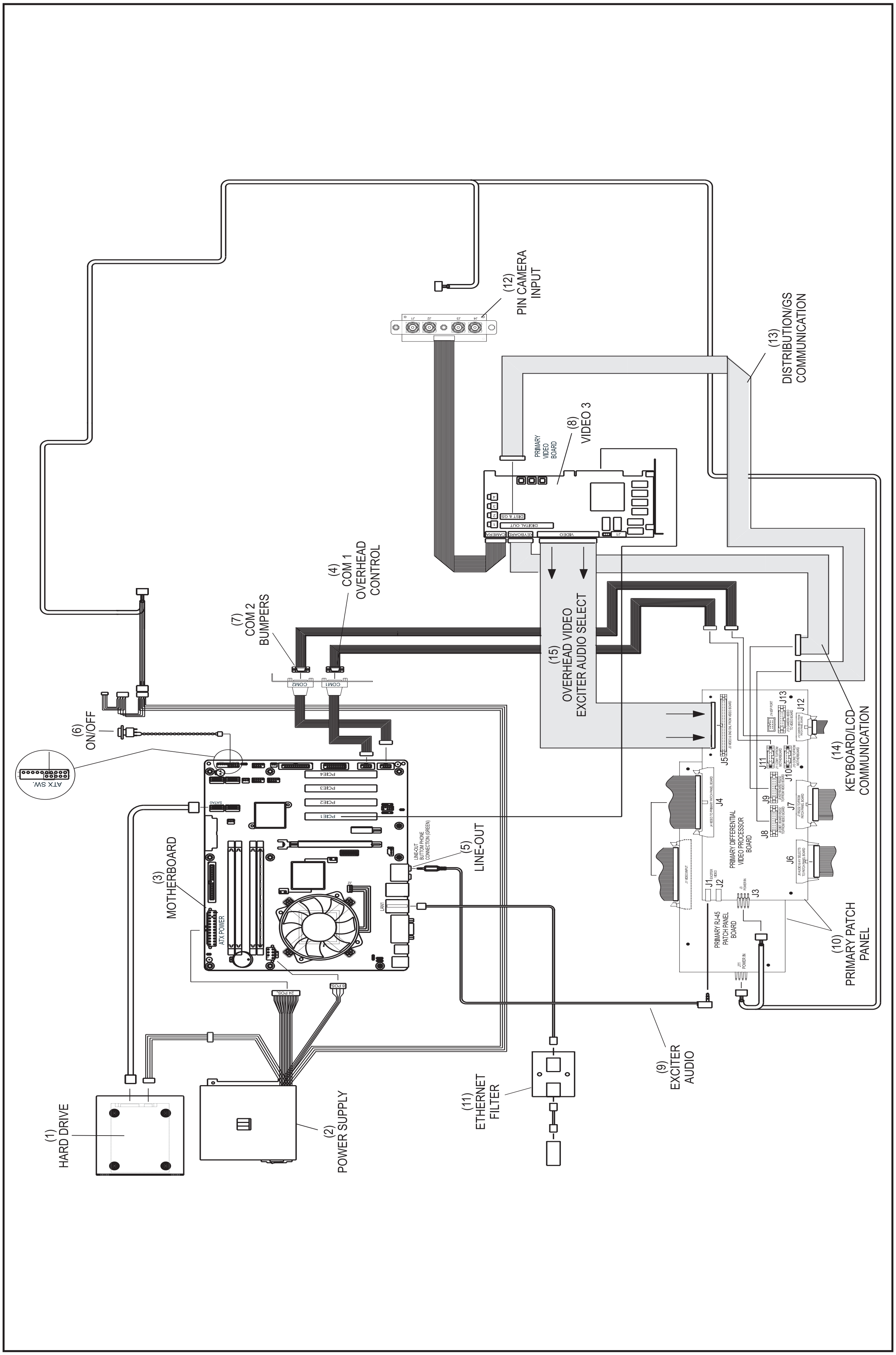
LCD Wide Screen Overhead to LCD Wide Screen Overhead Serial Control Cable (Part No. 57-500525-000)

(1) TO SERIAL COMMUNICATIONS
CONTROLLER


(1)
TO P1 ON LCD
VIDEO CONTROL
PCB
9
8
7
6
5
4
3
2
1
WHITE /ORANGE
ORANGE
WHITE/GREEN
GREEN
WHITE /BLUE
BLUE
WHITE/BROWN
BROWN
N/C
P1 TOUCHSCREEN
57-500827-000
SCORER VIDEO
(2)
TO VECTOR
SCORER COMPUTER
RED+
RED-
GRN+
GRN-
BLUE+
BLUE-
CSYNC+
CSYNC-
WHITE /ORANGE
ORANGE
WHITE/GREEN
GREEN
WHITE /BLUE
BLUE
WHITE/BROWN
BROWN
1
2
3
4
5
6
7
8
PIN 1
PIN 8
RJ-45 PINOUT

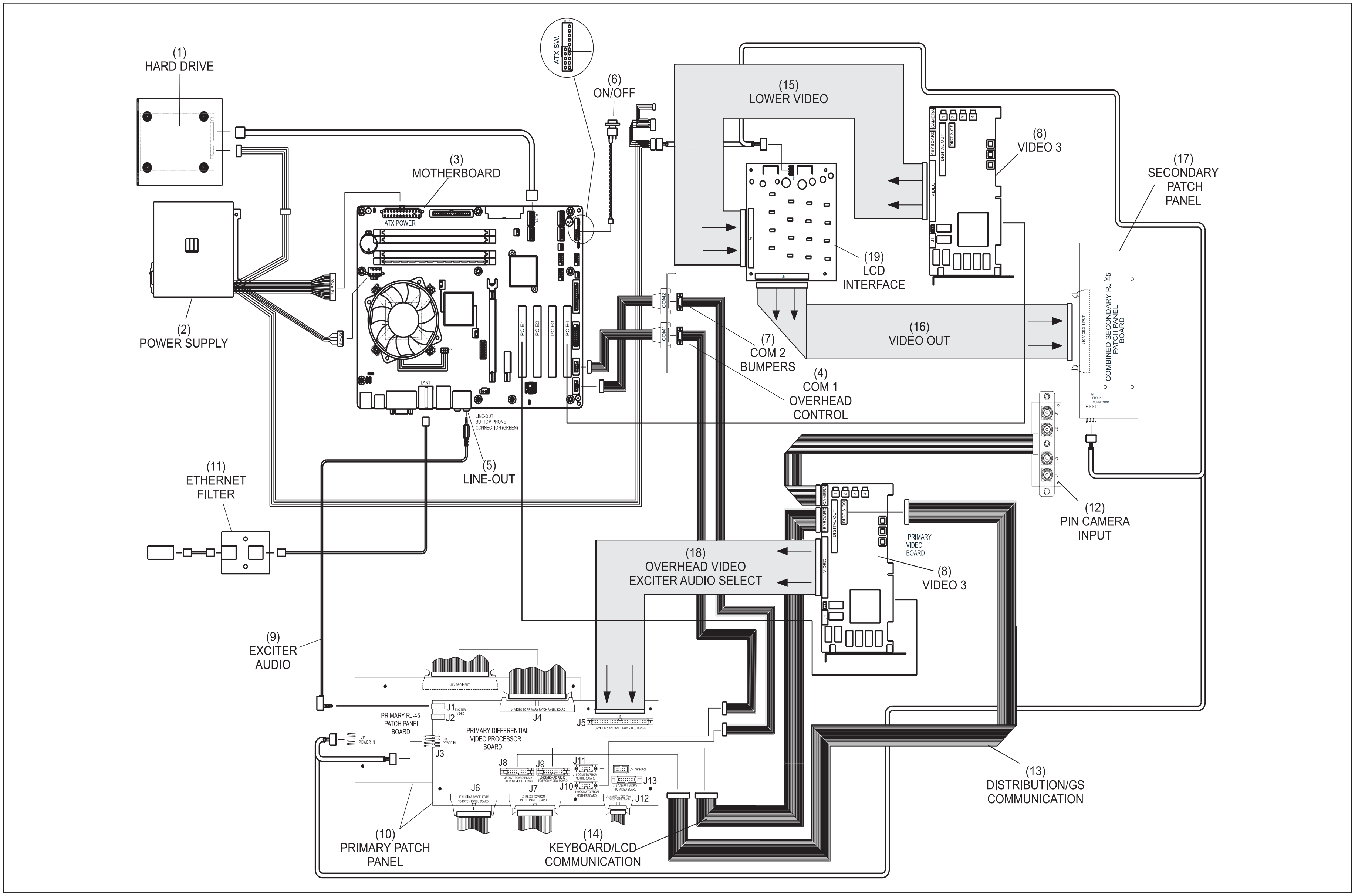
LCD Wide Screen Scorer Computer to LCD Touchscreen Video Cable (Part No. 57-500827-000)

(1) TO P1 ON LCD VIDEO CONTROL PCB (2) TO VECTOR SCORER COMPUTER


(1) HARD DRIVE
(2) POWER SUPPLY
(3) MOTHERBOARD
(4) COM 1 OVERHEAD CONTROL
(5) LINE-OUT
(6) ON/OFF
(7) COM 2 BUMPERS
(8) VIDEO 3
(9) EXCITER AUDIO
(10) PRIMARY PATCH PANEL
(11) ETHERNET FILTER
(12) PIN CAMERA INPUT
(13) DISTRIBUTION/GS COMMUNICATION
(14) KEYBOARD/LCD COMMUNICATION
(15) OVERHEAD VIDEO EXCITER AUDIO SELECT
ATX SW.
ATX POWER
24 POS.
8 POS.
PCIE1
PCIE2
PCIE3
PCIE4
COM1
COM2
LINE-OUT BUTTON PHONE CONNECTION (GREEN)
LAN1
PRIMARY VIDEO BOARD
VIDEO
CAMERA
KEYBOARD
DIGITAL OUT
DIST & GS
J1
PRIMARY DIFFERENTIAL VIDEO PROCESSOR BOARD
PRIMARY RJ-45 PATCH PANEL BOARD
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13

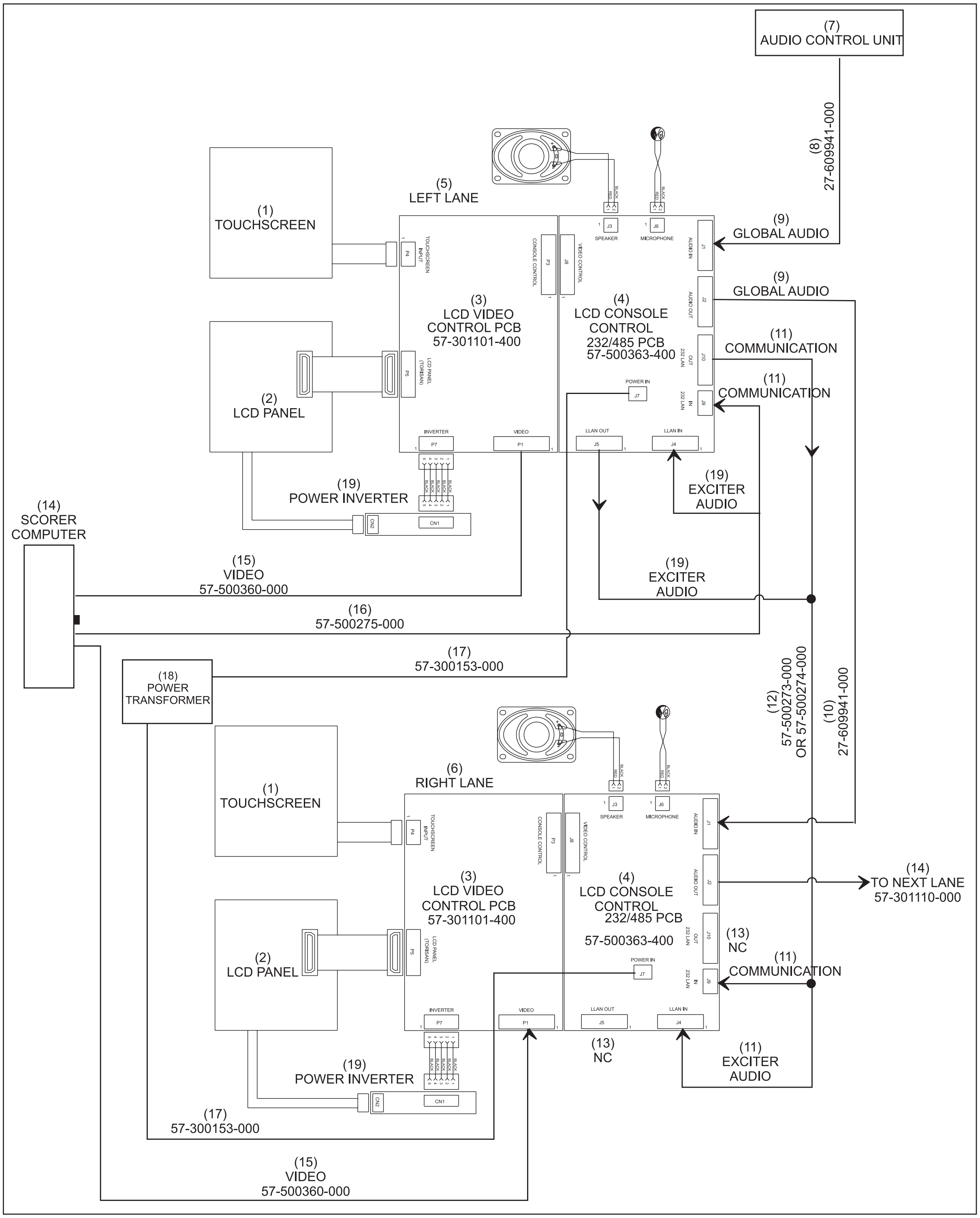
Vector Scoring Computer with Keypads

(1) HARD DRIVE CONTROL (SD ONLY)
(2) POWER SUPPLY
(3) MOTHER BOARD
(4) COM 1 OVERHEAD
(5) LINE-OUT
(6) ON/OFF
(7) COM 2 BUMPERS
(8) VIDEO3
(9) EXCITER AUDIO
(10) PRIMARY PATCH PANEL
(11) ETHERNET FILTER
(12) PIN CAMERA INPUT
(13) DISTRIBUTION/GS COMMUNICATION
(14) KEYBAORD/LCD COMMUNICATION
(15) OVERHEAD VIDEO / EXCITER AUDIO SELECT


(1) HARD DRIVE
(2) POWER SUPPLY
(3) MOTHERBOARD
ATX POWER
24 POS.
8 POS.
SATA0
PCIE1
PCIE2
PCIE3
PCIE4
LAN1
COM1
COM2
ATX SW.
(4) COM 1 OVERHEAD CONTROL
(5) LINE-OUT
LINE-OUT BUTTOM PHONE CONNECTION (GREEN)
(6) ON/OFF
(7) COM 2 BUMPERS
(8) VIDEO 3
(8) VIDEO 3
PRIMARY VIDEO BOARD
VIDEO
KEYBOARD
CAMERA
DIGITAL OUT
DIST & GS
J1
(9) EXCITER AUDIO
(10) PRIMARY PATCH PANEL
PRIMARY RJ-45 PATCH PANEL BOARD
J11 POWER IN
PRIMARY DIFFERENTIAL VIDEO PROCESSOR BOARD
J1 VIDEO INPUT
J1 EXCITER
J2 VIDEO
J3 POWER IN
J4 VIDEO TO PRIMARY PATCH PANEL BOARD
J5 VIDEO & SND SNL FROM VIDEO BOARD
J6 AUDIO & A/V SELECTS TO PATCH PANEL BOARD
J7 RS232 TO/FROM PATCH PANEL BOARD
J8 DIST. BOARD RS232 TO/FROM VIDEO BOARD
J9 KEYBOARD RS232 TO/FROM VIDEO BOARD
J10 COM2 TO/FROM MOTHERBOARD
J11 COM1 TO/FROM MOTHERBOARD
J12 CAMERA VIDEO FROM PATCH PANEL BOARD
J13 CAMERA VIDEO TO VIDEO BOARD
J14 ISP PORT
(11) ETHERNET FILTER
(12) PIN CAMERA INPUT
(13) DISTRIBUTION/GS COMMUNICATION
(14) KEYBOARD/LCD COMMUNICATION
(15) LOWER VIDEO
(16) VIDEO OUT
(17) SECONDARY PATCH PANEL
COMBINED SECONDARY RJ-45 PATCH PANEL BOARD
J10 VIDEO INPUT
J8 GROUND CONNECTOR
(18) OVERHEAD VIDEO EXCITER AUDIO SELECT
(19) LCD INTERFACE

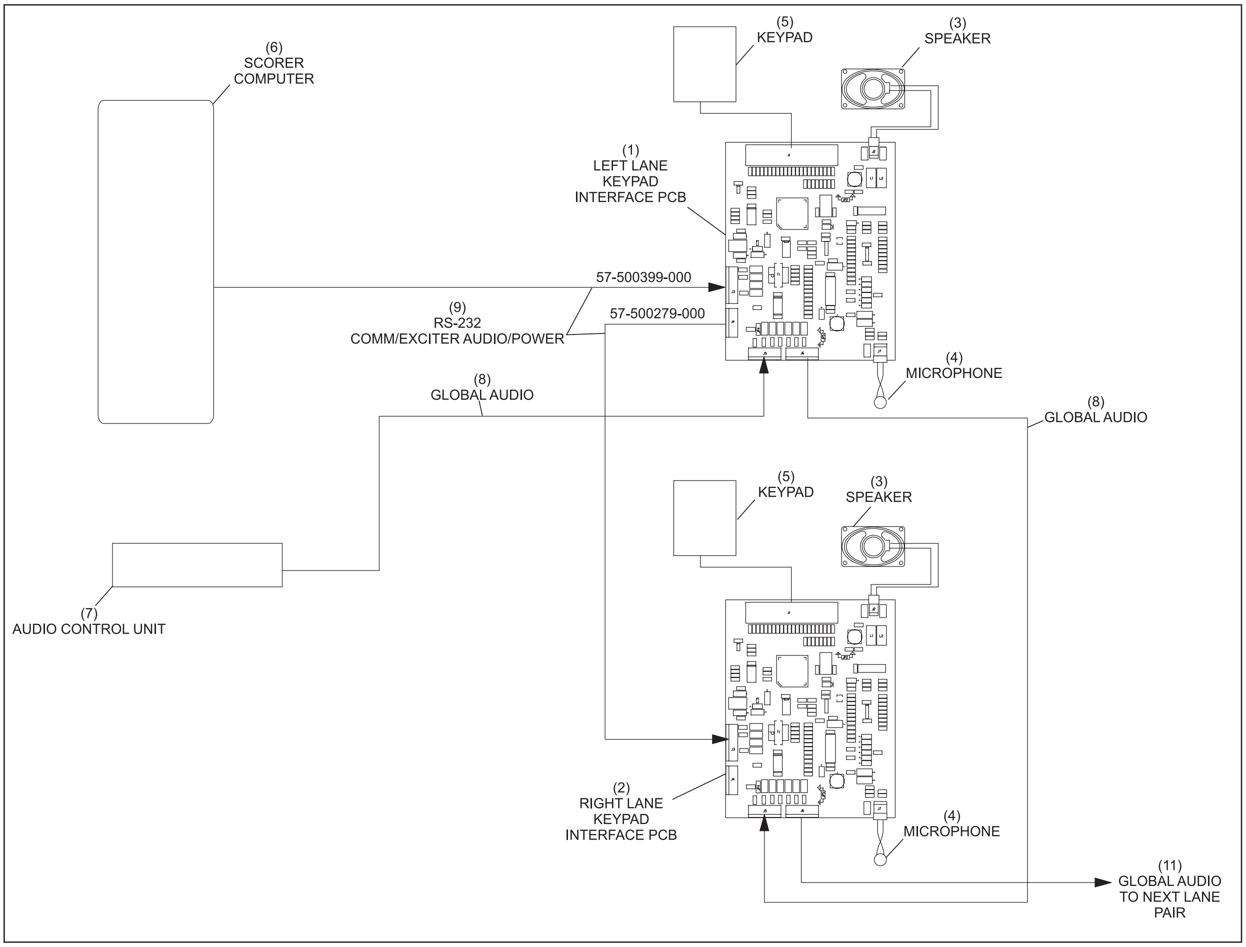
Vector Scoring Computer Lower LCDs

(1) HARD DRIVE
(2) POWER SUPPLY
(3) MOTHER BOARD
(4) COM 1 OVERHEAD CONTROL (SD ONLY)
(5) LINE-OUT
(6) ON/OFF
(7) COM 2 BUMPERS
(8) VIDEO3
(9) EXCITER AUDIO
(10) PRIMARY PATCH PANEL
(11) ETHERNET FILTER
(12) PIN CAMERA INPUT
(13) DISTRIBUTION / GS COMMUNICATION
(14) KEYBOARD / LCD COMMUNICATION
(15) LOWER VIDEO
(16) VIDEO OUT
(17) SECONDARY PATCH PANEL
(18) OVERHEAD VIDEO / EXCITER AUDIO SELECT
(19) LCD INTERFACE


(7)
AUDIO CONTROL UNIT
(8)
27-609941-000
(5)
LEFT LANE
(1)
TOUCHSCREEN
(9)
GLOBAL AUDIO
(9)
GLOBAL AUDIO
(3)
LCD VIDEO
CONTROL PCB
57-301101-400
(4)
LCD CONSOLE
CONTROL
232/485 PCB
57-500363-400
(11)
COMMUNICATION
(11)
COMMUNICATION
(2)
LCD PANEL
(19)
POWER INVERTER
(19)
EXCITER
AUDIO
(14)
SCORER
COMPUTER
(15)
VIDEO
57-500360-000
(19)
EXCITER
AUDIO
(16)
57-500275-000
(17)
57-300153-000
(18)
POWER
TRANSFORMER
(12)
57-500273-000
OR 57-500274-000
(10)
27-609941-000
(6)
RIGHT LANE
(1)
TOUCHSCREEN
(3)
LCD VIDEO
CONTROL PCB
57-301101-400
(4)
LCD CONSOLE
CONTROL
232/485 PCB
57-500363-400
(14)
TO NEXT LANE
57-301110-000
(13)
NC
(11)
COMMUNICATION
(2)
LCD PANEL
(13)
NC
(11)
EXCITER
AUDIO
(19)
POWER INVERTER
(17)
57-300153-000
(15)
VIDEO
57-500360-000

LCD Console Cabling Assembly

(1) TOUCHSCREEN
(2) LCD PANEL
(3) LCD VIDEO CONTROL PCB 57-301101-400
(4) COM CN1 57-500363-400
(5) LEFT LANE
(6) RIGHT LANE
(7) AUDIO CONTROL UNIT
(8) 27-609941-000
(9) GLOBAL AUDIO
(10) 27-609941-000
(11) COMMUNICATION
(12) 57-500273-000 OR 57-500274-000
(13) NO CONNECTION
(14) SCORING COMPUTER
(15) VIDEO57-500360-000
(16) 57-500275-000
(17) 57-300153-000
(18) POWER TRANSFORMER
(19) POWER INVERTER


(6) SCORER COMPUTER
(5) KEYPAD
(3) SPEAKER
(1) LEFT LANE KEYPAD INTERFACE PCB
57-500399-000
(9) RS-232 COMM/EXCITER AUDIO/POWER
57-500279-000
(8) GLOBAL AUDIO
(4) MICROPHONE
(8) GLOBAL AUDIO
(5) KEYPAD
(3) SPEAKER
(7) AUDIO CONTROL UNIT
(2) RIGHT LANE KEYPAD INTERFACE PCB
(4) MICROPHONE
(11) GLOBAL AUDIO TO NEXT LANE PAIR

Keypad Console Cabling Assembly

(1) LEFT LANE KEYPAD INTERFACE PCB
(2) RIGHT LANE KEYPAD INTERFACE PCB
(3) SPEAKER
(4) MICROPHONE
(5) KEYPAD
(6) SCORER COMPUTER
(7) AUDIO CONTROL UNIT
(8) GLOBAL AUDIO
(9) RS-232 COMM/EXCITER AUDIO/POWER
(10) 27-609941-000
(11) GLOBAL AUDIO TO NEXT LANE PAIR

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  Ball Speed Adjustment........ 11
 Pinsetter Modifications 13
  Sweep (Rake) Switch 13
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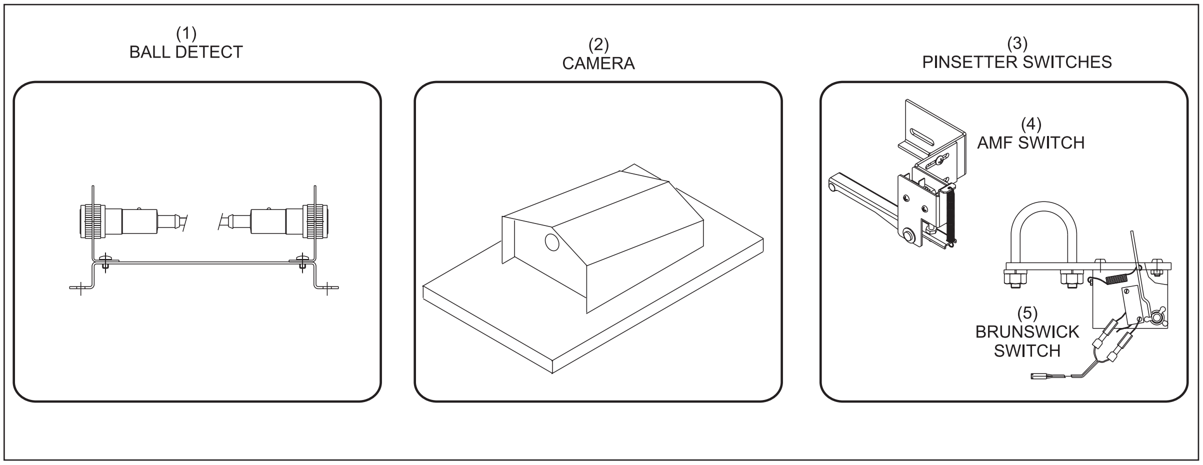
GENERAL DESCRIPTION

The Vector camera assembly is an electrical/optical device used with non-GS series pinsetters to count standing pins, control on/off and machine reset for a pair of pinsetters, and interface the foul units to the scoring system. The system uses a camera, ball detect assemblies, a distribution PCB, and special pinsetter modifications to accomplish this. Refer to figure titled *Vector Components.*

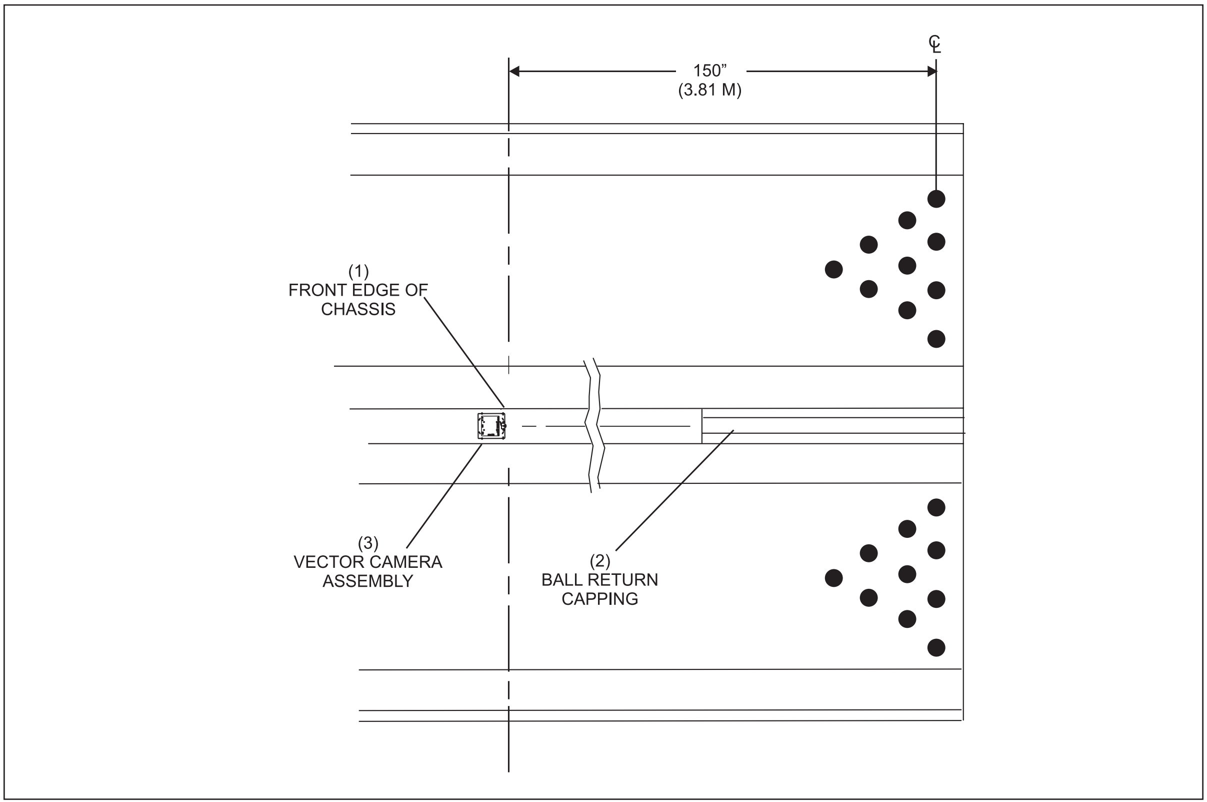


Vector Components

(1) BALL DETECT (2) VECTOR CAMERA CHASSIS (3) PINSETTER SWITCHES
(4) AMF SWITCH (5) BRUNSWICK SWITCH

The Vector camera chassis is mounted on the ball return capping of a lane pair so that the front edge of the unit is approximately 150" (3.81 m) from the center of the last row of pins. Refer to figure titled *Camera Position.* The assembly uses a single camera to take a picture of the pit area of both pinsetters. The picture is sent to the scoring computer where it is analyzed by the Video3 PCB. During the analysis, a portion of the picture is searched for bright reflections and shapes resembling pins. This is compared to a stored calibration to determine if the reflection level for the pins is above a reference brightness level set by the user through the control desk. Any reflection level that is above the set level is counted as a standing pin.

An infrared ball detect is mounted near the pinsetter and a switch is mounted on the pinsetter to monitor the rake (sweep) drop are used to ensure that the unit scores only after a ball has been thrown and the pinsetter has triggered. (A ball detect signal will not be accepted unless the switch is actuated.) Scoring occurs after a the rake (sweep) switch contacts have closed and a user determined time delay has passed. In the event that the pinsetter does not cycle on its own, the system will score then cycle the pinsetter using the machines reset circuit.



Vector Camera Position

(1) FRONT EDGE OF CHASSIS (2) BALL RETURN CAPPING (3) VECTOR CAMERA ASSEMBLY

The Vector camera consists of the following components:

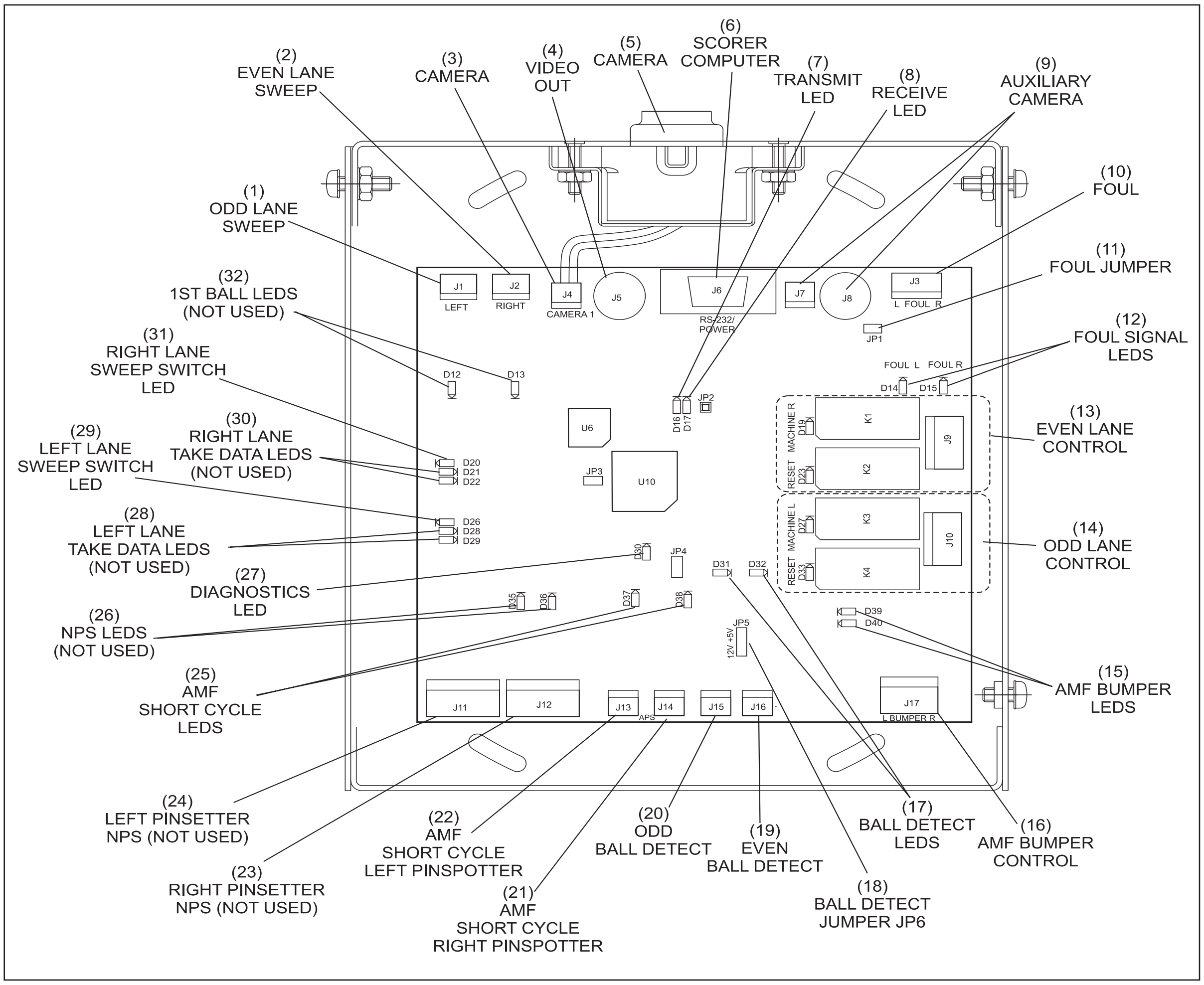
Ball Detect - The ball detect is an infrared device that senses when a ball has been thrown. The signal from the ball detect tells the Vector system when to begin the scoring cycle for a lane.

Pinsetter Modifications - A sweep (rake) switch is added to the pinsetter to make sure the camera takes the picture at the proper time during the pinsetter cycle. Also connections into the pinsetters circuits allows auto triggering of the pinsetter, special pinsetter cycles for No Tap or 3rd ball-10th frame situations, and AMF short cycle.

Vector Camera Chassis - The Vector Camera Chassis contains a camera and the Distribution PCB. The Distribution board powers the camera, interfaces the foul unit and ball detectors, controls the pinsetter on/off and triggering, and allows communication to the scorer computer.

VECTOR CAMERA CHASSIS - VERSION 6.0

The Vector Camera Chassis version 6.0 contains a camera and a Distribution PCB. The distribution board in camera chassis supplies power to the camera and routes the camera video to the scorer computer, turns the pinsetters on/off, cycles the pinsetters as needed, controls AMF automated bumpers, interfaces the ball detectors and foul unit to the scoring system, and controls the AMF pinspotter for short cycle situations. Version 6.0 also contains circuitry and connectors on the circuit board to expand functionality in the future. Refer to figure titled *Vector Camera Chassis 6.0.*


(1) ODD LANE SWEEP
(2) EVEN LANE SWEEP
(3) CAMERA
(4) VIDEO OUT
(5) CAMERA
(6) SCORER COMPUTER
(7) TRANSMIT LED
(8) RECEIVE LED
(9) AUXILIARY CAMERA
(10) FOUL
(11) FOUL JUMPER
(12) FOUL SIGNAL LEDS
(13) EVEN LANE CONTROL
(14) ODD LANE CONTROL
(15) AMF BUMPER LEDS
(16) AMF BUMPER CONTROL
(17) BALL DETECT LEDS
(18) BALL DETECT JUMPER JP6
(19) EVEN BALL DETECT
(20) ODD BALL DETECT
(21) AMF SHORT CYCLE RIGHT PINSPOTTER
(22) AMF SHORT CYCLE LEFT PINSPOTTER
(23) RIGHT PINSETTER NPS (NOT USED)
(24) LEFT PINSETTER NPS (NOT USED)
(25) AMF SHORT CYCLE LEDS
(26) NPS LEDS (NOT USED)
(27) DIAGNOSTICS LED
(28) LEFT LANE TAKE DATA LEDS (NOT USED)
(29) LEFT LANE SWEEP SWITCH LED
(30) RIGHT LANE TAKE DATA LEDS (NOT USED)
(31) RIGHT LANE SWEEP SWITCH LED
(32) 1ST BALL LEDS (NOT USED)
J1
LEFT
J2
RIGHT
J4
CAMERA 1
J5
J6
RS-232/POWER
J7
J8
J3
L FOUL R
JP1
FOUL L FOUL R
D14
D15
D12
D13
D16
D17
JP2
U6
U10
JP3
D20
D21
D22
D26
D28
D29
D30
JP4
D31
D32
D35
D36
D37
D38
JP5
12V +5V
D39
D40
K1
K2
K3
K4
J9
J10
D19
D23
D27
D33
RESET MACHINE R
RESET MACHINE L
J11
J12
J13
J14
APS
J15
J16
J17
L BUMPER R

Vector Camera Chassis Version 6.0

The function of the components in the Vector Camera Chassis version 5.0 are:

(1) **Odd Lane Sweep (J1) -** Signal from the odd lane pinsetter's sweep/rake switch.

(2) **Even Lane Sweep (J2) -** Signal from the even lane pinsetter's sweep/rake switch.

(3) **Camera (J4) -** Connection for the camera's power and video.

(4) **Video (J5) -** Connection to Scorer Computer for the camera video.

(5) **Camera Lens -** The camera used to take pictures of the pins.

(6) **Scorer Computer (J6) -** Connection used to communicate to the scorer computer. This connection also transfers the camera's video to the scorer computer.

(7) **Transmit LED (D16) -** LED D16 flashes when the board is transmitting information to the scorer computer.

(8) **Receive LED (D17) -** LED D17 flashes when the board is receiving information to the scorer computer.

(9) **Auxiliary Camera (J7,J8) -** Not Used

(10) **Foul (J3) -** Input for the signals from the foul units for both the left and right lanes. Also refer to *(9) Foul Jumper (JP1).*

(11) **Foul Jumper (JP1) -** Jumper used to configure the distribution so that is can properly handle the foul input signal. When using Brunswick foul units or foul units that uses a relay type (switch) output, install a jumper to short the pins. If using a foul unit that supplies +12VDC as an output (AMF) remove the jumper.

(12) **Foul Signal LEDs (D14,D15) -** LED D14 (green) turns "ON" when the board is receiving a foul signal for the left lane. LED D15 (red) turns "ON" when the board is receiving a foul signal for the right lane.

(13) **Even Lane Pinsetter Control -** Connection to the even (right) lane pinsetter. The distribution PCB turns the even lane pinsetter on/off by energizing relay K1 and resets (cycle) the pinsetter by energizing relay K2. LED D19 turns "on" when the pinsetter power relay (K1) energizes. LED D23 turns "on" when the pinsetter reset relay (K2) energizes.

(14) **Odd Lane Pinsetter Control -** Connection to the odd (left) lane pinsetter. The distribution PCB turns the even lane pinsetter on/off by energizing relay K3 and resets (cycle) the pinsetter by energizing relay K4. LED D27 turns "on" when the pinsetter power relay (K3) energizes. LED D33 turns "on" when the pinsetter reset relay (K4) energizes.

(15) **AMF Bumper LEDs -** LED D39 turns "On" when a signal is sent to the AMF automated bumpers on the right lane. LED D40 turns "On" when a signal is sent to the AMF automated bumpers on the left lane.

(16) **AMF Bumper Control (J17) -** Connection to AMF automated bumpers.

(17) **Ball Detect LEDs -** LEDs D31 (left lane) and D32 (right lane) turn "On" when a ball detect signal occurs.

(18) **Ball Detect Jumper (JP6) -** Jumper used to configure the distribution PCB to power the ball detectors with 5VDC or a 12VDC. For Vector type ball detectors, set the jumper to 12VDC.

(19) **Even Ball Detect (J14) -** Connection for the signal and power for the even lane ball detector.

(20) **Odd Ball Detect (J13) -** Connection for the signal and power for the odd lane ball detector.

(21) **AMF Short Cycle Right Pinspotter (J14) -** Connection to the AMF 8270MP pinspotter to allow the even lane machine to perform a short cycle when needed.

(22) **AMF Short Cycle Left Pinspotter (J13) -** Connection to the AMF 8270MP pinspotter to allow the odd lane machine to perform a short cycle when needed.

(23) **Right Pinsetter NPS -** Not Used

(24) **Left Pinsetter NPS -** Not Used

(25) **AMF Short Cycle LEDs -** Leds D37 (left lane) and D38 (right lane) turn “On” when the short cycle signal sent AMF pinspotter.

(26) **NPS LEDs -** Not Used

(27) **Diagnostics LED -** Led D30 flashes when the Distribution PCB is working properly.

(28) **Left Lane Take Data LEDs -** Not Used

(29) **Left Lane Sweep Switch LED (D26) -** “On” when the sweep switch for the left (odd) lane is actuated.

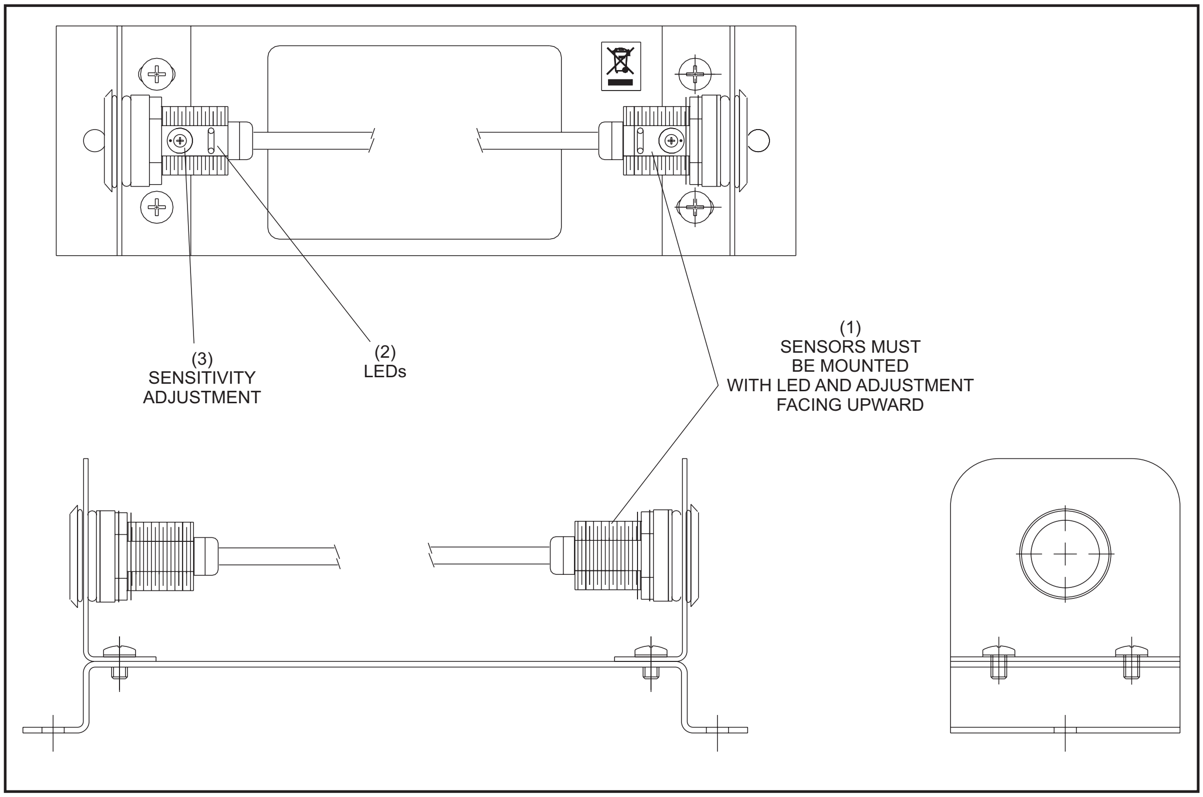
(30) **Right Lane Take Data LEDs -** Not Used

(31) **Right Lane Sweep Switch LED (D20) -** “On” when the sweep switch for the left (odd) lane is actuated.

(32) **1st Ball LEDs -** Not Used

BALL DETECTOR

The Vector uses a ball detector that is an infrared sensing device. The ball detector unit is made up of two infrared transmitters and receivers, one for each lane. Within each lane unit there are two lenses, one to focus the transmitted infrared beam toward the reflector on the opposite side of the lane, and one to focus the return light from the reflector onto the infrared receiver. LEDs on the unit indicate power, signal stability and level. The provided adjustment allow the user to adjust the ball detection sensitivity. Refer to figure titled *Vector Ball Detector.*


(3)
SENSITIVITY
ADJUSTMENT
(2)
LEDs
(1)
SENSORS MUST
BE MOUNTED
WITH LED AND ADJUSTMENT
FACING UPWARD

Vector Ball Detector

(1) SENSORS MUST BE MOUNTED WITH LED AND ADJUSTMENT FACING UPWARD

(2) LEDS

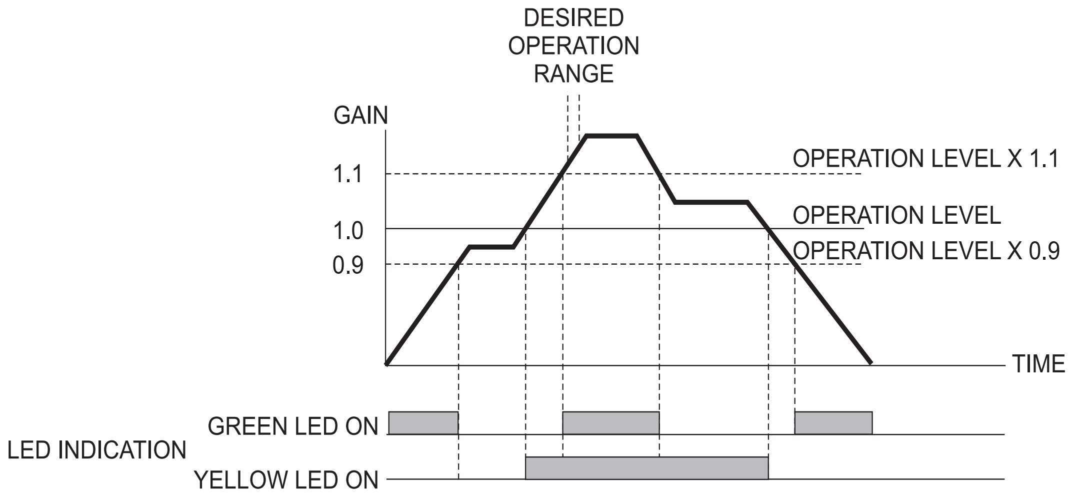
(3) SENSITIVITY ADJUSTMENT

BALL DETECT LED OPERATION

Green LED (Power and Stability) - The green LED has a dual purpose. During normal operation it is used to indicate power. During calibration it indicates the signal stability. The LED will turn off when the signal level (light level) is between 90% (10% below) and 110% (10% above) of the level needed for detection. Refer to figure titled *Vector Ball Detector*.- *LED Sensitivity Chart*

i ***NOTE:*** *When adjusting the ball detector, the green LED will turn "Off " when the light returning from the reflector is between 90% and 110% of trigger threshold. This is normal operation.*

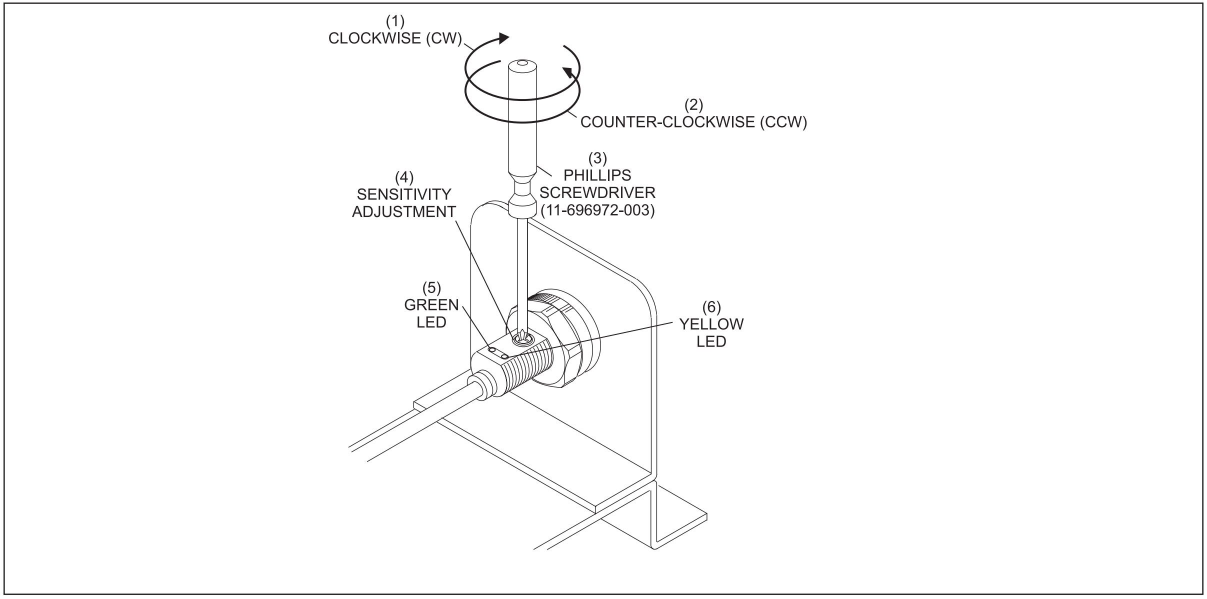
Yellow LED (Output) - The yellow LED indicates whether the Ball Detect output has been triggered. When the detector is receiving sufficient light, the LED will be "On" to indicate that the output is not enabled (0V). When the beam is blocked the LED turns "Off" to indicate the output is enabled (+V).



Vector Ball Detect - LED Sensitivity Chart

BALL DETECT CALIBRATION INSTRUCTIONS

1. Turn the sensitivity adjustment fully CCW. The yellow LED will be "Off" and the Green LED will be "On". Refer to figure titled *Sensitivity Adjustment 1.*



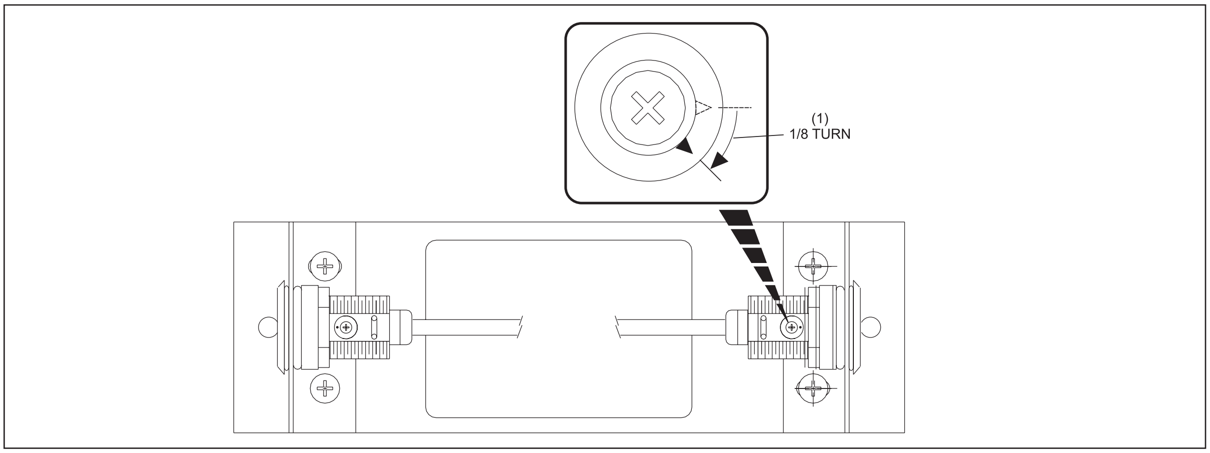
Sensitivity Adjustment 1

(1) CLOCKWISE (CW)
(2) COUNTER-CLOCKWISE (CCW)
(3) PHILLIPS SCREWDRIVER (11-696972-003)
(4) SENSITIVITY ADJUSTMENT
(5) GREEN LED
(6) YELLOW LED

2. Turn the sensitivity adjustment CW, very slowly until both LEDs turn "On". Refer to figure *titled Sensitivity Adjustment 1.*

NOTE: *When adjusting the ball detector, the green LED will turn "Off", the Yellow LED will turn "On", then the Green LED will turn back "On". This is normal operation.*

3. Once both the green and yellow LEDs are "On", turn the sensitivity adjustment CW an additional 1/8 turn. Refer to figure titled *Sensitivity Adjustment.*2



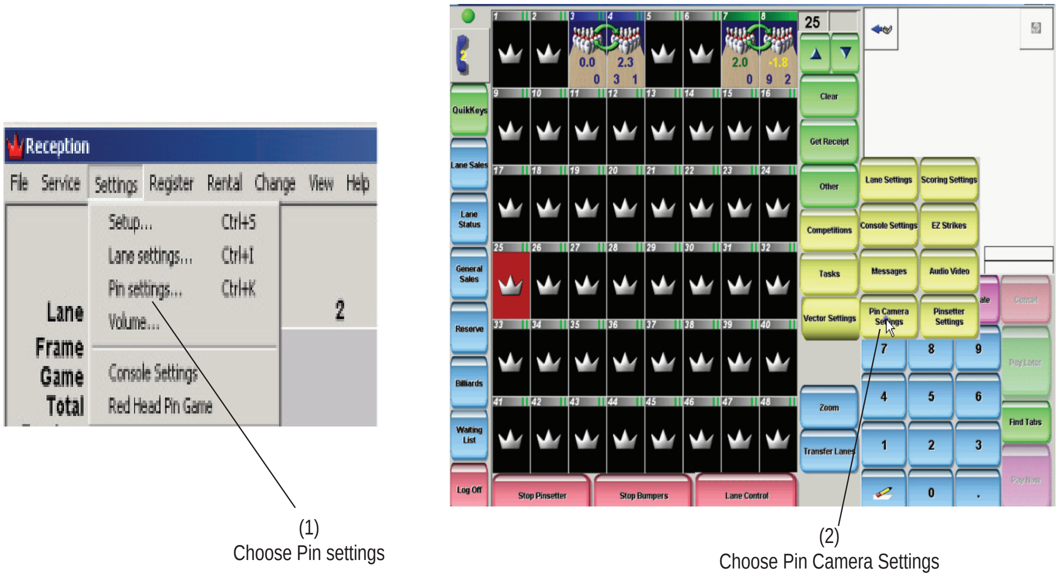
Sensitivity Adjustment 2

Ball Speed Adjustment

Use the following steps to adjust how the ballspeed is calculated:

1. For Vector desk systems select the “Settings” menu then the “Pin settings” menu item from the drop down menu.

   For Vector Plus systems go to the Lane Status screen, select the lane desired lane, Vector Settings, then Pin Camera Settings. Refer to the figures titled *Accessing Pin Camera Settings*


Reception
File Service Settings Register Rental Change View Help
Setup... Ctrl+S
Lane settings... Ctrl+I
Pin settings... Ctrl+K
Volume...
Console Settings
Red Head Pin Game
Lane
Frame
Game
Total
2
QuikKeys
Lane Sales
Lane Status
General Sales
Reserve
Billiards
Waiting List
Log Off
Stop Pinsetter
Stop Bumpers
Lane Control
25
Clear
Get Receipt
Other
Competitions
Tasks
Vector Settings
Zoom
Transfer Lanes
Lane Settings
Scoring Settings
Console Settings
EZ Strikes
Messages
Audio Video
Pin Camera Settings
Pinsetter Settings
Find Tabs
(1)
Choose Pin settings
(2)
Choose Pin Camera Settings

Accessing Pin Camera Settings

(1) CHOOSE PIN SETTINGS (2) CHOOSE PIN CAMERA SETTINGS

2. On the pinsettings page verify that the desired lane is being shown on the pin camera page. Change the lane number as needed. Refer to figure titled *Pin Camera Settings.*

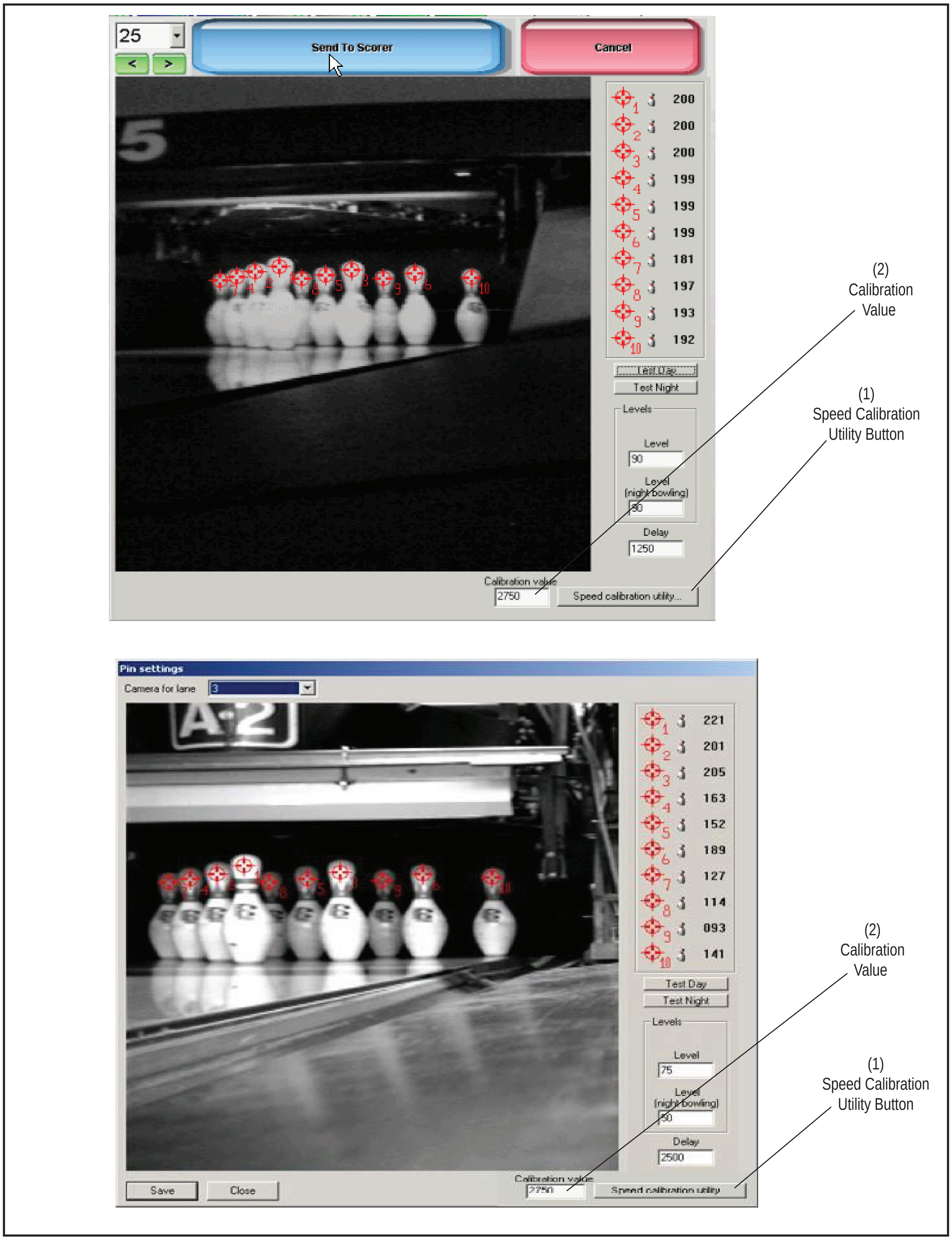
3. Change the ball speed calculation the value using either of the following methods.

   a. Change the number in the Calibration Value box as needed. To decrease the speed shown at the scorer enter a value lower than the number stored. To increase the speed shown to the scorer enter a number greater than the one stored.

NOTE: *A typical starting value is approximately 2700.*

   b. Run the speed calibration utility

4. Re-boot the scoring computer to activate the changes.



25
Send To Scorer
Cancel
Test Day
Test Night
Levels
Speed calibration utility...
(2) Calibration Value
(1) Speed Calibration Utility Button
Pin settings
Test Day
Test Night
Levels
Save
Close
Speed calibration utility
(2) Calibration Value
(1) Speed Calibration Utility Button

1	200
2	200
3	200
4	199
5	199
6	199
7	181
8	197
9	193
10	192

Level: 90

Level (night bowling): 30

Delay: 1250

Calibration value: 2750

Camera for lane: 3

1	221
2	201
3	205
4	163
5	152
6	189
7	127
8	114
9	093
10	141

Level: 75

Level (night bowling): 50

Delay: 2500

Calibration value: 2750

Pin Camera Settings

(1) SPEED CALIBRATION UTILITY BUTTON (2) CALIBRATION VALUE

PINSETTER MODIFICATIONS

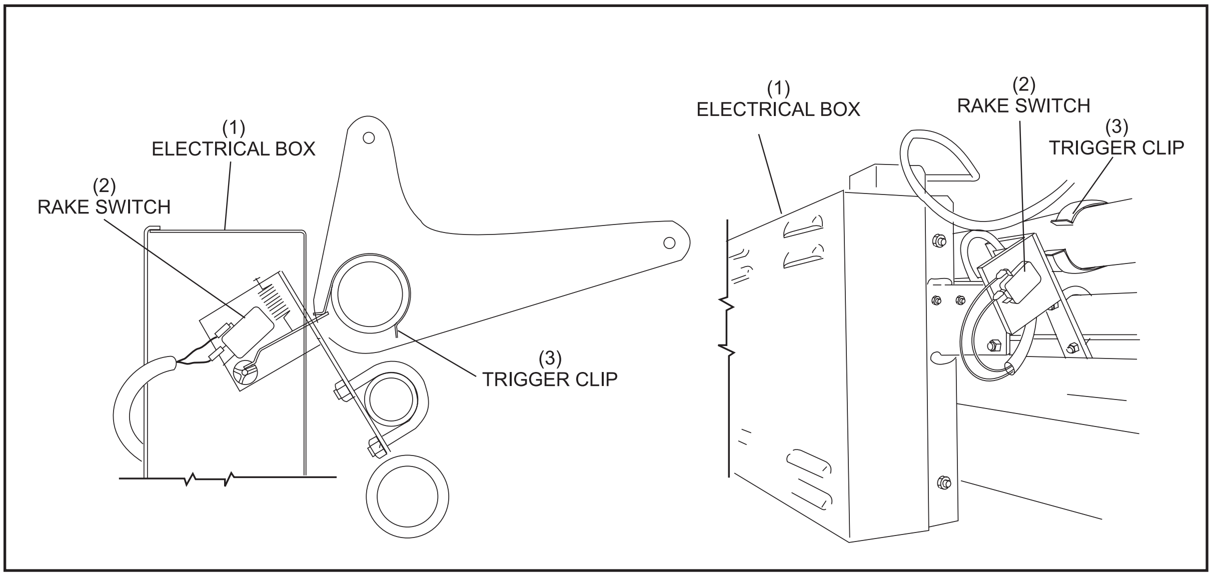
Sweep (Rake) Switch

The sweep (rake) switch ensures that the camera takes the picture only after the pinsetter triggers. If a ball detection has occurred, the opening of sweep switch, causes the camera to take a picture after a preset delay. Additional ball detect signals will be ignored when the switch is opened. The wiring of the switches is dependant on the EPROM version of the distribution PCB. Refer to figures titled *Switch Wiring Chart*, *Brunswick Rake Switch* and *AMF Sweep Switch.*

Sweep (Rake) Switch Wiring

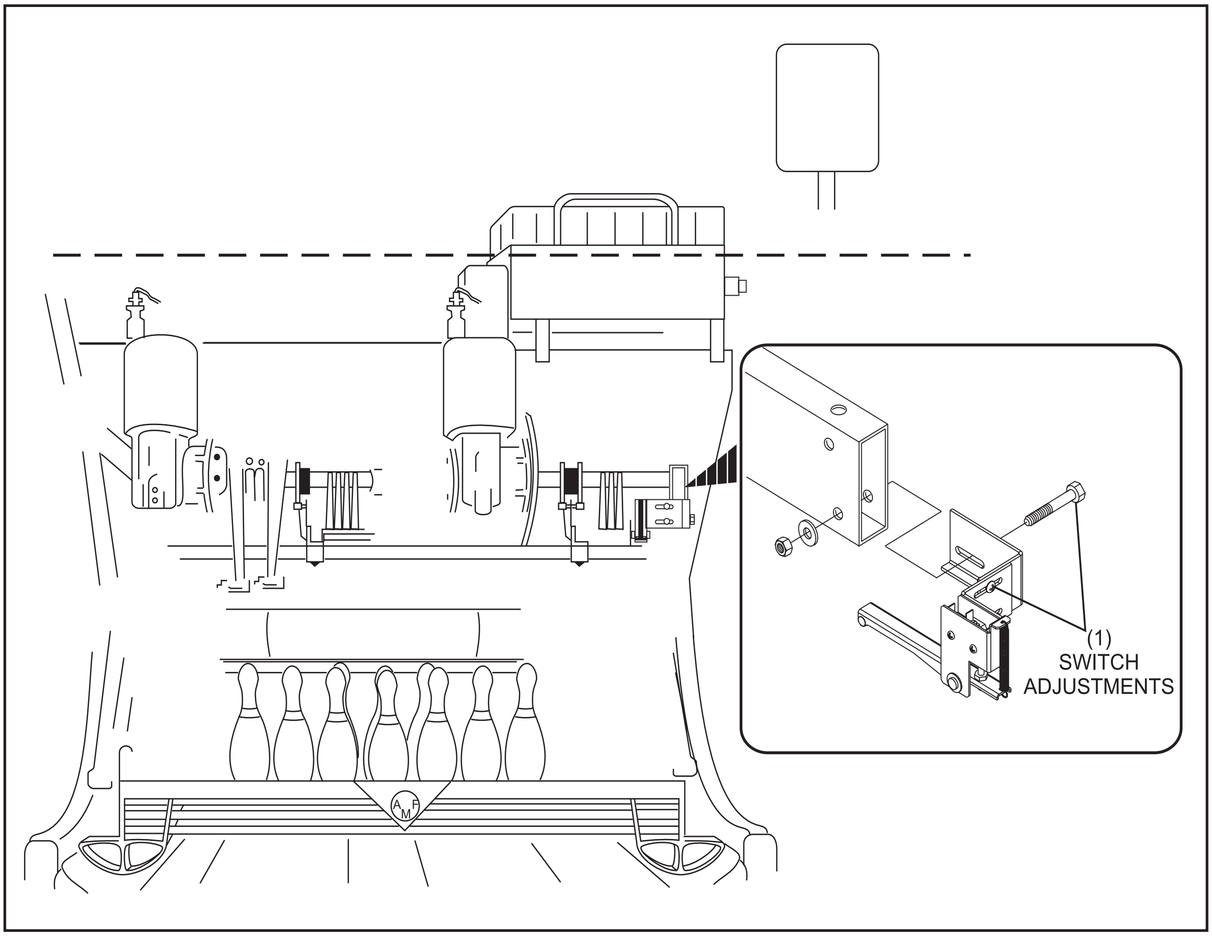
INSTALLATION	**WIRING**
Brunswick Pinsetters with Distribution PCB V1.3 or later	Common (COM), Normally Closed (NC)
AMF Pinspotter Sweep Connections	Common (COM), Normally Closed (NC)

Switch Wiring Chart



Brunswick Rake Switch

(1)	ELECTRICAL BOX	(2)	RAKE SWITCH	(3)	TRIGGER CLIP


A
M
F
(1)
SWITCH
ADJUSTMENTS

AMF Sweep Switch

(1) SWITCH ADJUSTMENTS

SCORING SEQUENCE OF EVENTS

First Ball, Second Ball

The following describes the events necessary for the first and second ball scoring sequences.

NOTE*: The scorer console must be turned on, and a bowler's name entered.*

1. The bowler delivers the first ball. The ball breaks the ball detect's light path and sends a signal to the distribution PCB.

2. The scoring process starts.

3. The pinsetter is triggered by the ball.

NOTE: *If the pinsetter does not trigger on its own, the distribution board will automatically take a picture and trigger the machine after a time delay that is calculated based on the fast ball/slow ball settings as set on the scorer settings screen and continues from step 6.*

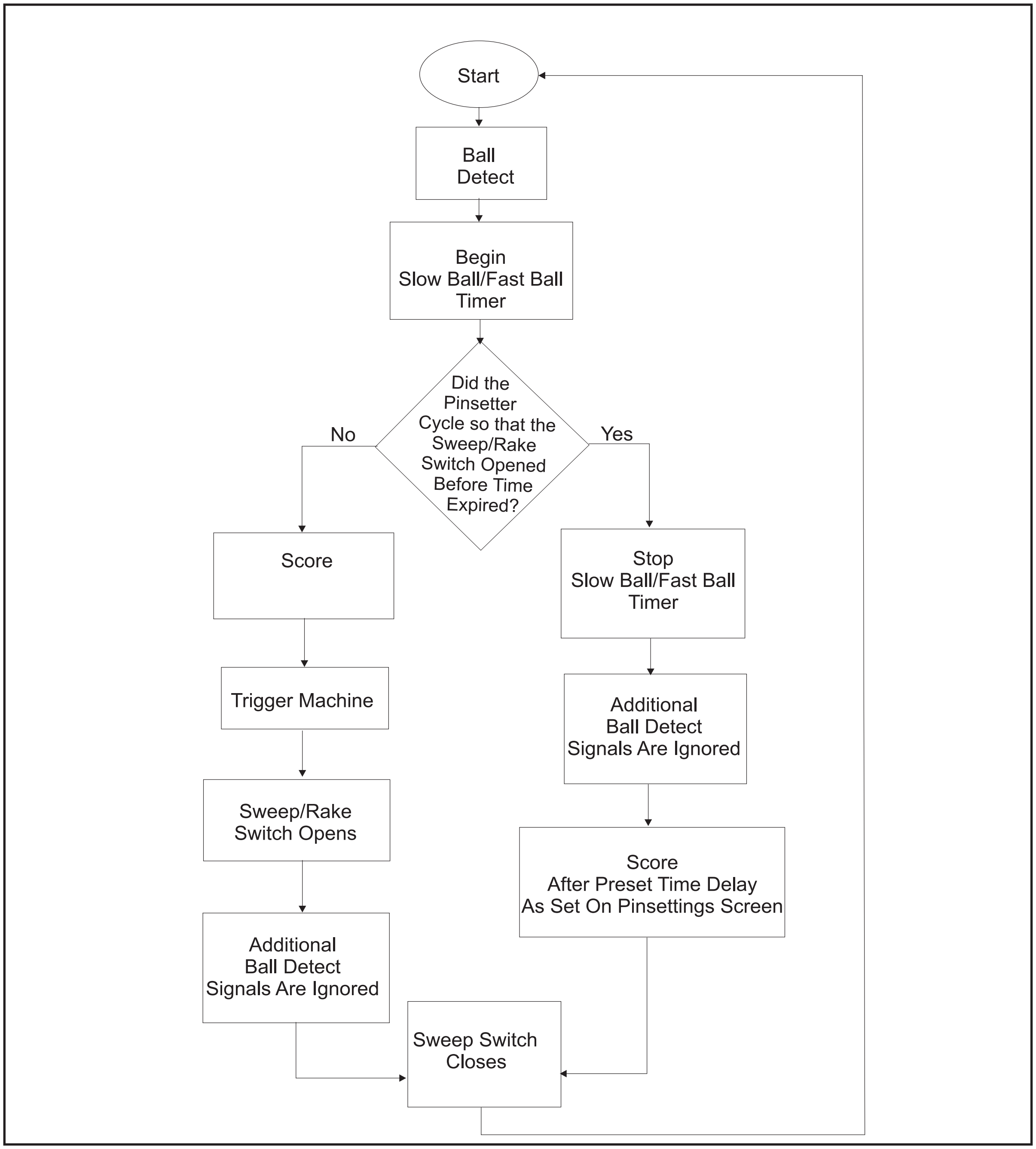
4. The sweep falls downward causing the sweep switch to open - sending signal to the Distribution PCB.

5. After the time delay entered on the pinsettings screen at the control desk, the camera takes a picture and sends it to the Video3 PCB.

6. The Video3 PCB analyzes the picture.

7. Score is displayed.

8. The sweep switch closes to reset scoring cycle.


Start
Ball Detect
Begin Slow Ball/Fast Ball Timer
Did the Pinsetter Cycle so that the Sweep/Rake Switch Opened Before Time Expired?
No
Yes
Score
Trigger Machine
Sweep/Rake Switch Opens
Additional Ball Detect Signals Are Ignored
Stop Slow Ball/Fast Ball Timer
Additional Ball Detect Signals Are Ignored
Score After Preset Time Delay As Set On Pinsettings Screen
Sweep Switch Closes

First Ball, Second Ball Scoring Sequence

No Tap

The following describes the events for the no tap scoring sequence.

This cycle occurs when a bowler throws a no tap strike and the scorer is set to No Tap scoring. At the end of the regular cycle, the pinsetter will automatically cycle a second time so the next bowler does not have to press the reset button to get a full rack of pins.

1. The bowler delivers the first ball. The ball breaks the ball detect's light path and sends a signal to the distribution PCB.
2. The scoring process starts.
3. The pinsetter is triggered by the ball or if the pinsetter does not trigger on its own, the a reset signal is sent from the Distribution PCB to trigger the machine.

NOTE: *If the pinsetter does not trigger on its own, the distribution board will automatically take a picture and trigger the machine after a time delay that is calculated based on the fast ball/slow ball settings as set on the scorer settings screen and continues from step 6.*

4. The sweep falls downward causing the sweep switch to open - sending signal to the Distribution PCB.
5. After the time delay entered on the pinsettings screen at the control desk, the camera takes a picture and sends it to the Video3 PCB.
6. The Video3 PCB analyzes the picture.
7. $^{N}_{T}$X is displayed on CRT's.
8. The sweep switch closes to reset scoring cycle.
9. The Distribution PCB sends a reset signal to the machine causing it to cycle a second time.

3rd Ball 10th Frame

The following describes the events necessary for the third ball tenth frame scoring sequence.

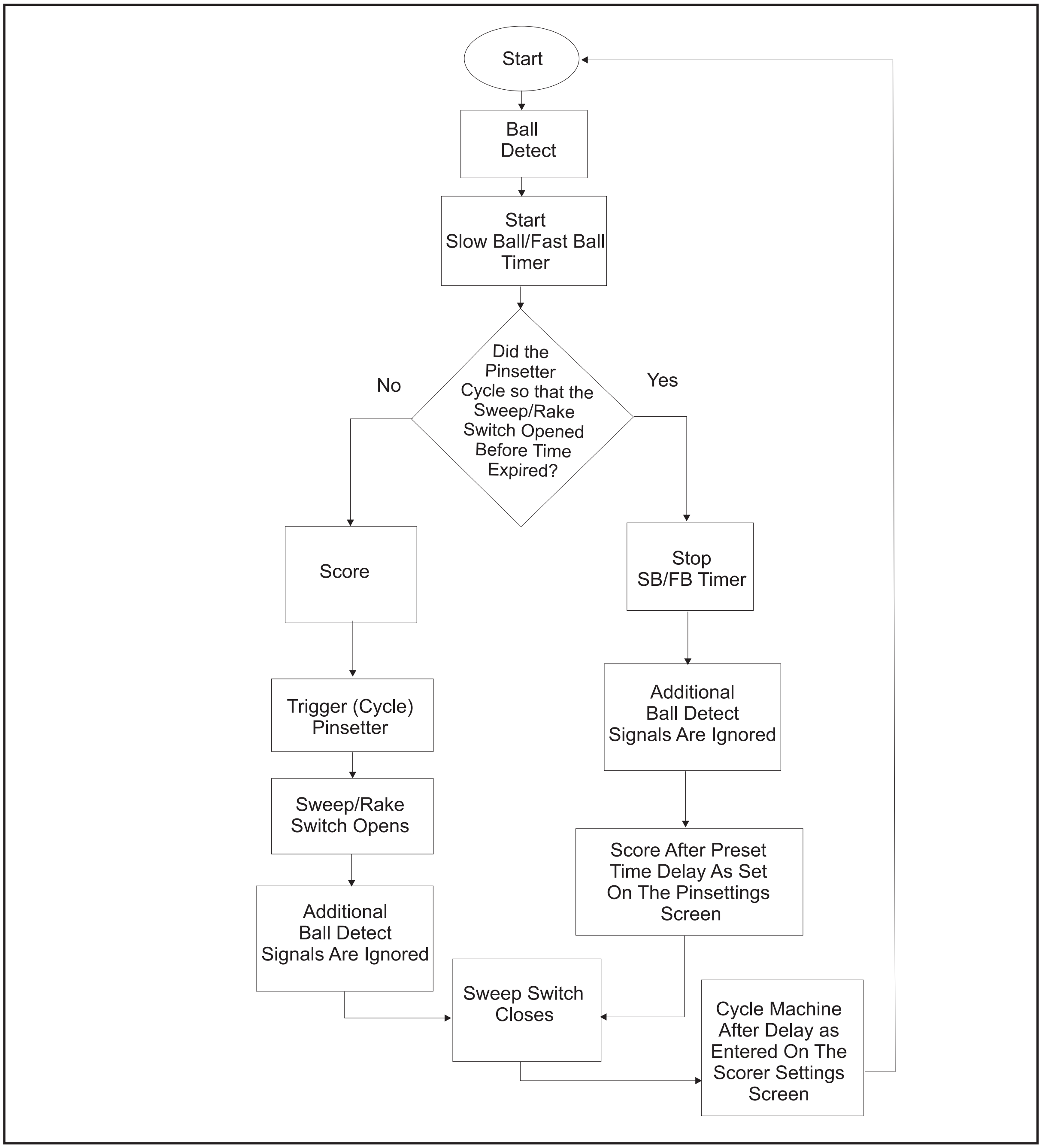
This cycle occurs at the end of the tenth frame for a bowler that received a “bonus” ball after a spare or a double. If the bowler does not strike on the “bonus” ball, the pinspotter will cycle a second time so the next bowler is not required to push the Reset button to get a full rack, first ball.

***NOTE:** The scorer console must be turned on, a bowler’s name entered, and the sequencing arrows on a bowler’s name.*

1. The bowler delivers the first ball. The ball breaks the ball detect’s light path and sends a signal to the Distribution PCB.
2. The scoring process starts.
3. The pinsetter is triggered by the ball or if the pinsetter does not trigger on its own, the a reset signal is sent from the Distribution PCB to trigger the machine.

***NOTE:** If the pinsetter does not trigger on its own, the distribution board will automatically take a picture and trigger the machine after a time delay that is calculated based on the fast ball/slow ball settings as set on the scorer settings screen and continues from step 6.*

4. The sweep falls downward causing the sweep switch to open - sending signal to the Distribution PCB.
5. After the time delay entered on the pinsettings screen at the control desk, the camera takes a picture and sends it to the Video3 PCB.
6. The Video3 PCB analyzes the picture and determines a strike has not occurred.
7. The score is displayed on CRT’s.
8. The sweep switch closes to reset scoring cycle.
9. The Distribution PCB sends a reset signal to the machine causing it to cycle a second time.


Start
Ball Detect
Start Slow Ball/Fast Ball Timer
Did the Pinsetter Cycle so that the Sweep/Rake Switch Opened Before Time Expired?
No
Yes
Score
Stop SB/FB Timer
Trigger (Cycle) Pinsetter
Additional Ball Detect Signals Are Ignored
Sweep/Rake Switch Opens
Score After Preset Time Delay As Set On The Pinsettings Screen
Additional Ball Detect Signals Are Ignored
Sweep Switch Closes
Cycle Machine After Delay as Entered On The Scorer Settings Screen

No Tap, Third Ball 10th Frame Scoring Sequence

Pinsettings

The “Pinsetting” (Vector) and Pin Camera Setting (Vector Plus) functions are used to control the operation of the Pinfall Camera. The Pinfall Camera takes a picture of the standing pins that is used to calculate the score. The camera settings are very important for proper operation of the scoring system. The score for each ball is determined by comparing the light level within a target with a threshold value. If the light level inside the target is higher than the threshold value, the scorer will determine the pin is standing. If the light level inside the target is lower than the threshold value, the scorer will determine the pin has fallen and score it as pinfall. The system has two light thresholds. One that is set up for normal operation and one that is set up for operation in low light conditions such as black lights, or times when lights over the bowling lanes are turned off. Refer to the figures titled *Accessing Pin Camera Settings*, *Pin Setting Window-Vector Control Desk* and *Pin Camera Settings Window-Vector Plus Control Desk*.

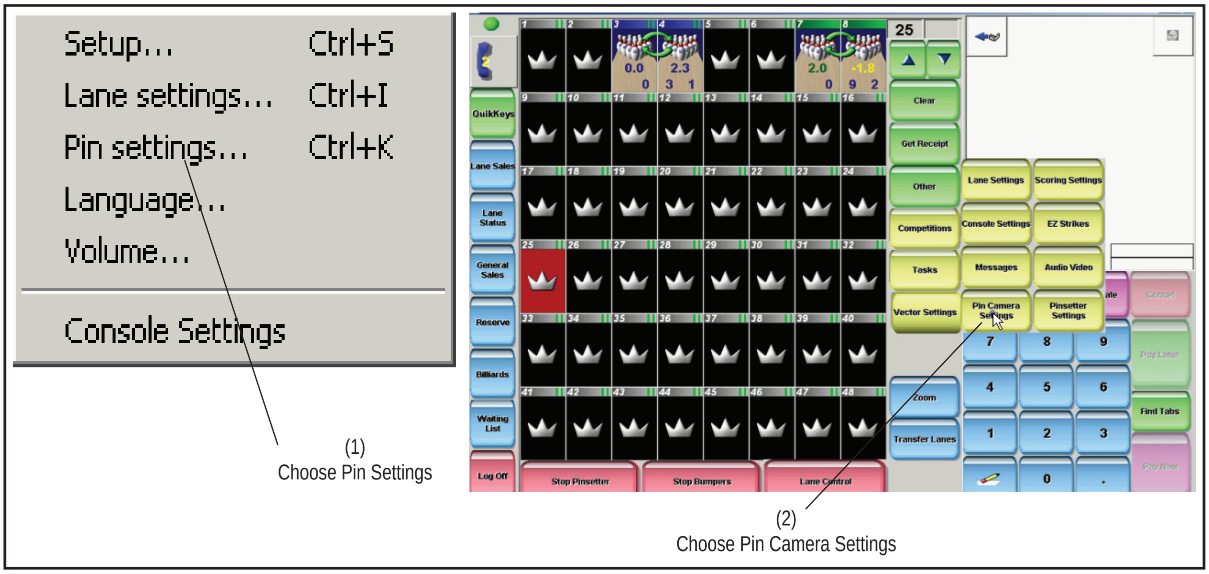
Use the following sequence to access the pin camera settings screen:

Vector Control Desk

1. Select the “Settings” menu.
2. Select the “Pin settings” menu item.
3. Enter a password, if required.
4. Make desired changes.
5. Select the “OK” button.

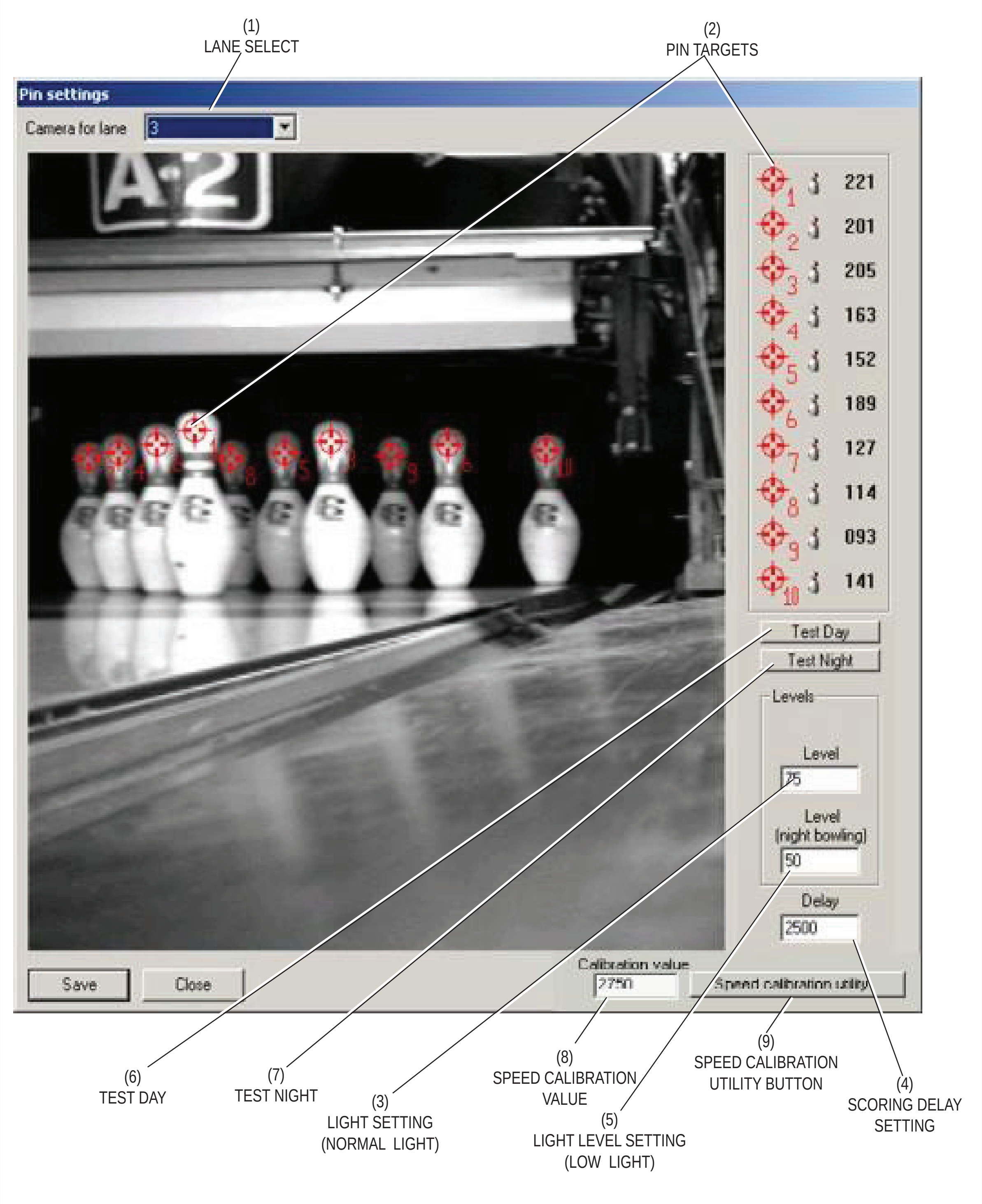
Vector Plus

1. Select the “Vector Settings” button while on the lane status screen.
2. Select “Pin Camera Settings”.


Setup... Ctrl+S
Lane settings... Ctrl+I
Pin settings... Ctrl+K
Language...
Volume...
Console Settings
(1)
Choose Pin Settings
QuikKeys
Lane Sales
Lane Status
General Sales
Reserve
Billiards
Waiting List
Log Off
Stop Pinsetter
Stop Bumpers
Lane Control
Clear
Get Receipt
Other
Competitions
Tasks
Vector Settings
Zoom
Transfer Lanes
Lane Settings
Scoring Settings
Console Settings
EZ Strikes
Messages
Audio Video
Pin Camera Settings
Pinsetter Settings
Find Tabs
(2)
Choose Pin Camera Settings

Accessing Pin Camera Settings

(1) CHOOSE PIN SETTINGS (2) CHOOSE PINCAMERA SETTINGS



Pin settings

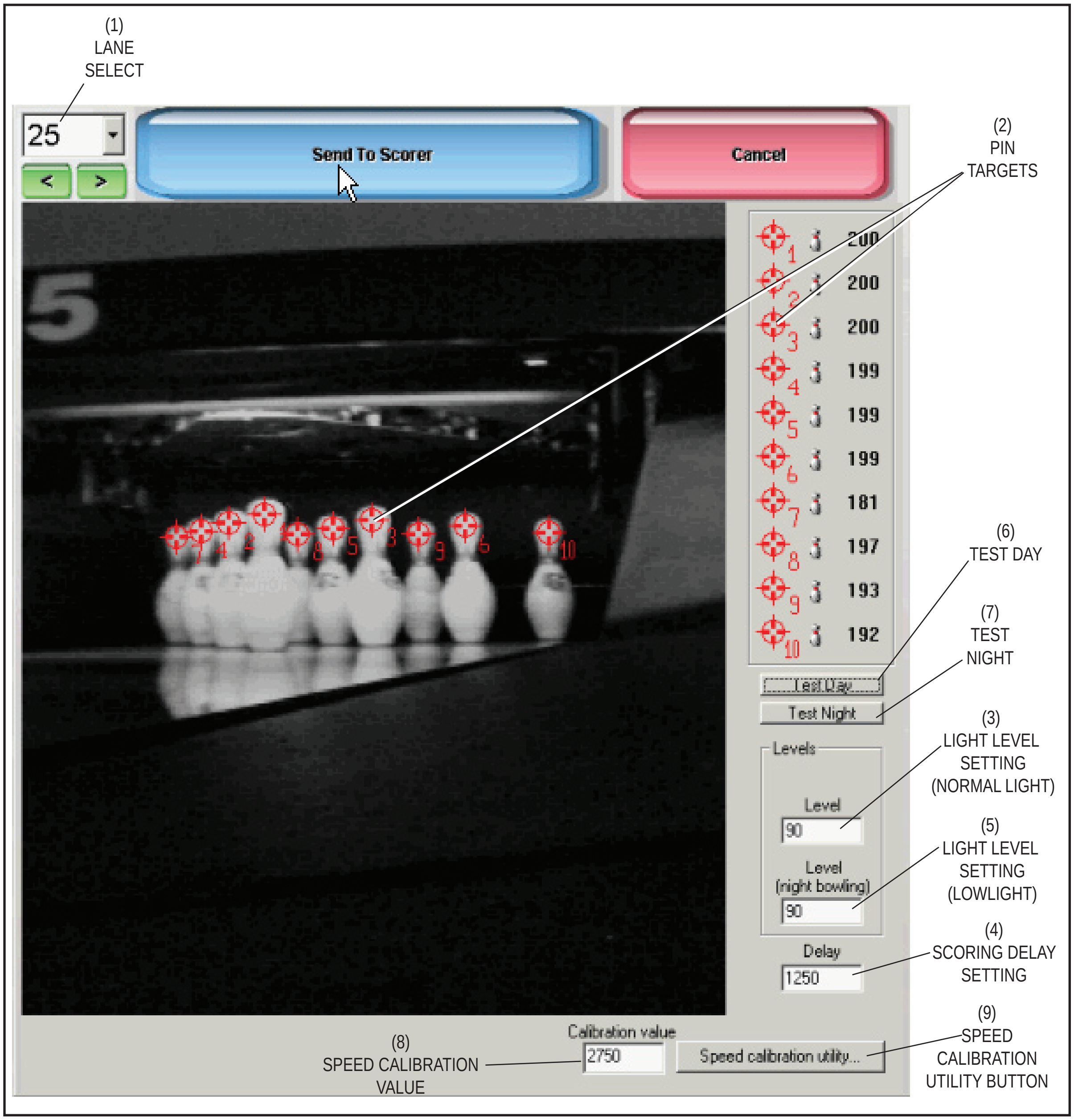
Camera for lane: 3

Pin	Value
1	221
2	201
3	205
4	163
5	152
6	189
7	127
8	114
9	093
10	141

Levels
Level: 75
Level (night bowling): 50
Delay: 2500
Calibration value: 2750

Test Day
Test Night
Save
Close
Speed calibration utility
A-2
(1) LANE SELECT
(2) PIN TARGETS
(6) TEST DAY
(7) TEST NIGHT
(3) LIGHT SETTING (NORMAL LIGHT)
(8) SPEED CALIBRATION VALUE
(5) LIGHT LEVEL SETTING (LOW LIGHT)
(9) SPEED CALIBRATION UTILITY BUTTON
(4) SCORING DELAY SETTING

Pin Setting Window-Vector Control Desk


(1) LANE SELECT
Send To Scorer
Cancel
(2) PIN TARGETS
(6) TEST DAY
(7) TEST NIGHT
Test Day
Test Night
(3) LIGHT LEVEL SETTING (NORMAL LIGHT)
(5) LIGHT LEVEL SETTING (LOWLIGHT)
(4) SCORING DELAY SETTING
(8) SPEED CALIBRATION VALUE
Speed calibration utility...
(9) SPEED CALIBRATION UTILITY BUTTON
5
1 2 3 4 5 6 7 8 9 10

25

1	200
2	200
3	200
4	199
5	199
6	199
7	181
8	197
9	193
10	192

Levels

Level: 90

Level (night bowling): 90

Delay: 1250

Calibration value: 2750

Pin Camera Settings Window-Vector Plus Control Desk

(1) **Lane Select -** Drop down box used to select the lane for calibration.

(2) **Pin Targets -** The spots where the camera is looking to determine whether or not that pin is standing. The target are set by dragging them from the target area at the left and placing them over the proper pins in the display. Once in position the light level (0 - 255) coming from the pin will appear to the left of the target.

(3) **Light Level Setting (Normal Light) -** Setting used to determine the minimum light level needed to detect a pin as standing during normal bowling conditions. *A good rule of thumb is to select a value midpoint between the level of light shown for the darkest pin and the level displayed when a target is positioned on the background.* Normally the preset level will be in the 80 to 100 range, but if the lighting is dimmer or brighter than normal, it may fall outside these values.

The **Level** should be set to a substantially lower value than the light level for all pins, particularly pins in the back rows, where there is less lighting. For example, two camera pictures of the same lane, taken immediately after each other, can have different light levels. For this reason it is a good idea to take several pictures, in order to see how much the light can vary. Also remember that, during bowling, the camera pictures are taken when the sweep is down. This results in pictures that are somewhat darker than the pictures used during setup. It is important to allow for this when setting the levels.

(4) **Scoring Delay -** The “Delay” time, in milliseconds, controls when the scoring picture is taken. The time starts once the rake/sweep has left the home position and the sweep switch has opened. This value should be set to allow the rake/sweep to drop to the guard position before the picture is taken. The delay should end before the rack/table can make contact with the top of the pins. If the interval is too short it may include pins just about to fall or the sweep board may block the camera from seeing the pins. If the delay is too long, the pinsetter deck or table may block the pins.

NOTE: *1500-3000 milliseconds is a typical setting for most pinsetters.*

(5) **Light Level Setting (Low Light) -** An alternative light level setting to the that can be used to determine the minimum light level needed to detect a pin as standing. This is usually used to set a lower threshold for use during Cosmic or other low light situations.

(6) **Test Day -** Click this button to simulate how the camera will score when using the light level value entered in the Level box.

(7) **Test Night -** Click this button to simulate how the camera will score when using the light level value entered in the Level (Night Bowling) box.

(8) **Speed Calibration Value -** Enter a new value in this box to change the ball speed calculation. Increasing the value cause an increase in the ball speed shown on the overhead. Lower this value decreased the speed shown.

(9) **Speed Calibration Utility Button -** Click this button to run the ball speed calibration wizard.

Camera Calibration

In order to calibrate the camera, the pinsetter associated with the camera must be on with 10 pins standing on the pindeck. Perform the following steps to calibrate the camera to the pins:

1. Select the lane to be calibrated.

2. Using the mouse, drag the target for the Pin 1 from the column at the right side of the dialog box to the head of the pin 1. The number in the column on the right indicates the light level for that pin.

3. Repeat the previous step for all pins.

NOTE: *It is important to place the correct pin target on its corresponding pin; if not, incorrect scoring will occur.*

4. Set the *initial* Light Threshold:

    a. Record the light value for all ten pins.
    b. Knock all ten pins over and record the light value for each pin.
    c. Select the "Level" field and enter a value midway between the lowest light level value recorded in *step a* and the light highest level recorded in *step b*.

NOTE: *The initial light level setting described is a good starting point for camera calibration. The actual light level used may be varied from this setting to accommodate different lighting and pin conditions, such as colored pins.*

5. Set the *initial* Night Light Threshold:

    a. Set the bowling center's lighting up as it would be used during night bowling events such as cosmic bowling, black light bowling or other reduced lighting conditions.
    b. Record the light value for all ten pins.
    c. Knock all ten pins over and record the light value for each pin.
    d. Select the "Level" field and enter a value midway between the lowest light level value recorded in *step b* and the light highest level recorded in *step c*.

6. Set the Delay value:

    a. Select the delay field.

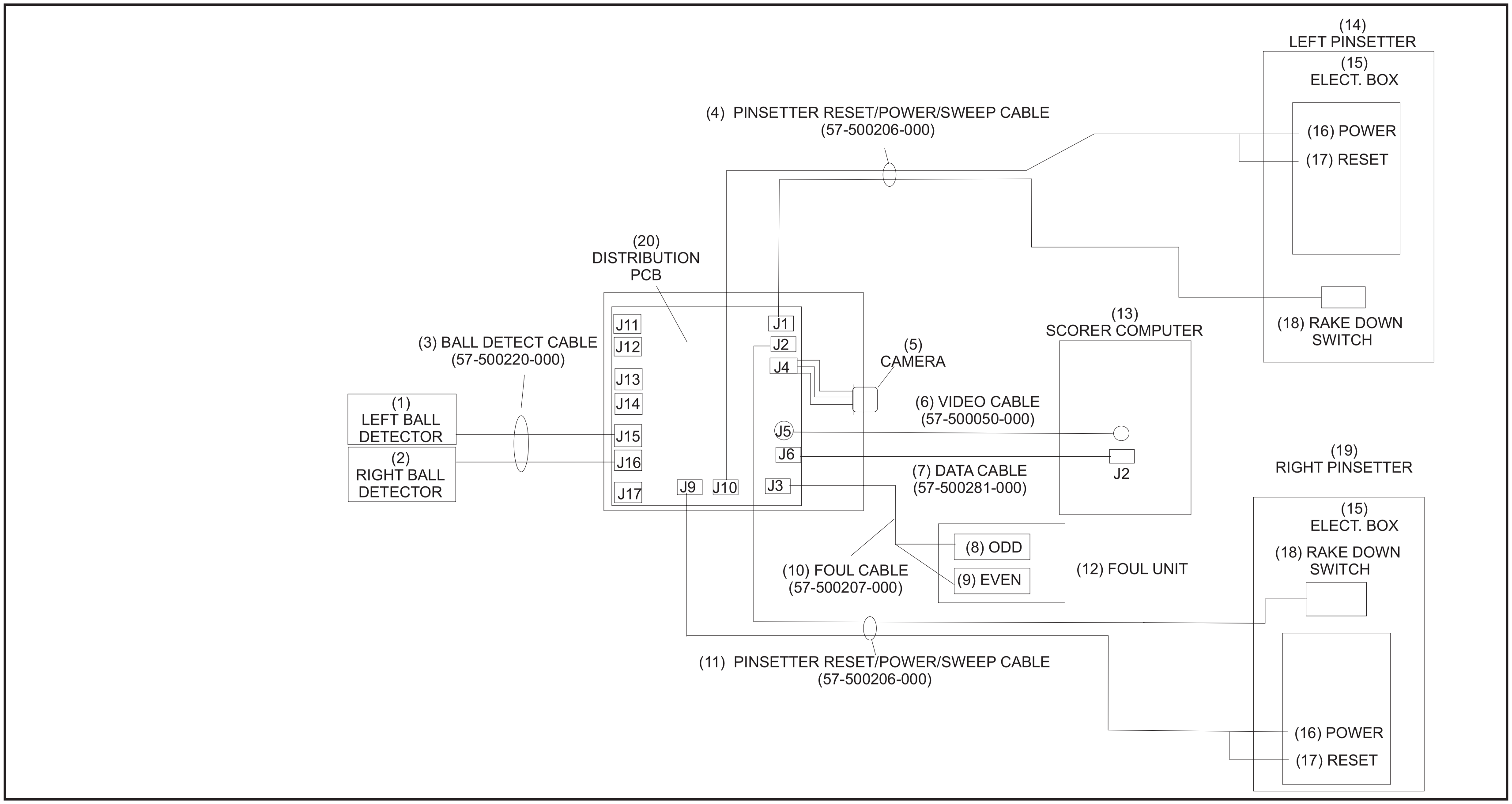
    b. Enter the amount of delay between the time that the rake or sweep is triggered and when the camera should take the picture for scoring. This value should be set to allow the rake/sweep to drop to the guard position before the picture is taken. The delay should end before the rack/table begins to move.

NOTE: *1500-3000 milliseconds is a typical setting for most pinsetters.*

7. When all camera settings have been made for this lane, select the "Save" button, or "Send to Scorer" as appropriate

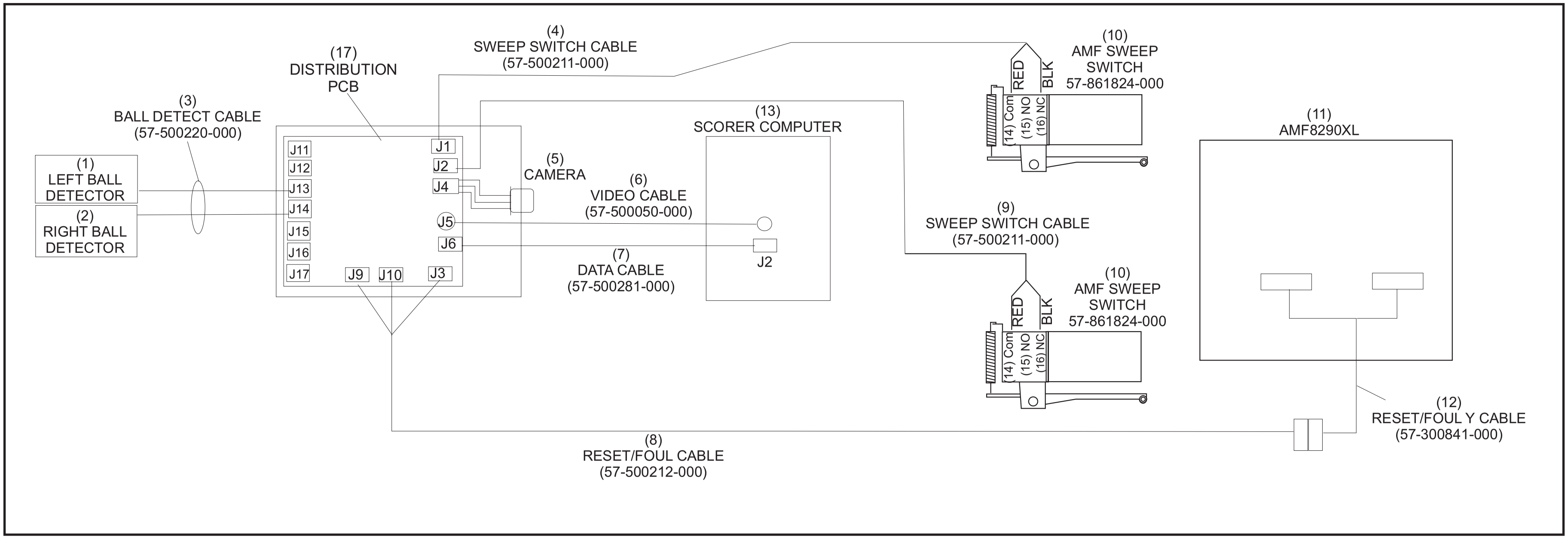
. ***NOTE:*** *The Vector program will automatically exit and restart when settings have been changed.*

CABLE DIAGRAMS


(14)
LEFT PINSETTER
(15)
ELECT. BOX
(16) POWER
(17) RESET
(18) RAKE DOWN SWITCH
(4) PINSETTER RESET/POWER/SWEEP CABLE
(57-500206-000)
(20)
DISTRIBUTION
PCB
(3) BALL DETECT CABLE
(57-500220-000)
(1)
LEFT BALL
DETECTOR
(2)
RIGHT BALL
DETECTOR
J11
J12
J13
J14
J15
J16
J17
J9
J10
J1
J2
J4
J5
J6
J3
(5)
CAMERA
(6) VIDEO CABLE
(57-500050-000)
(7) DATA CABLE
(57-500281-000)
(13)
SCORER COMPUTER
J2
(8) ODD
(9) EVEN
(12) FOUL UNIT
(10) FOUL CABLE
(57-500207-000)
(19)
RIGHT PINSETTER
(15)
ELECT. BOX
(18) RAKE DOWN
SWITCH
(16) POWER
(17) RESET
(11) PINSETTER RESET/POWER/SWEEP CABLE
(57-500206-000)

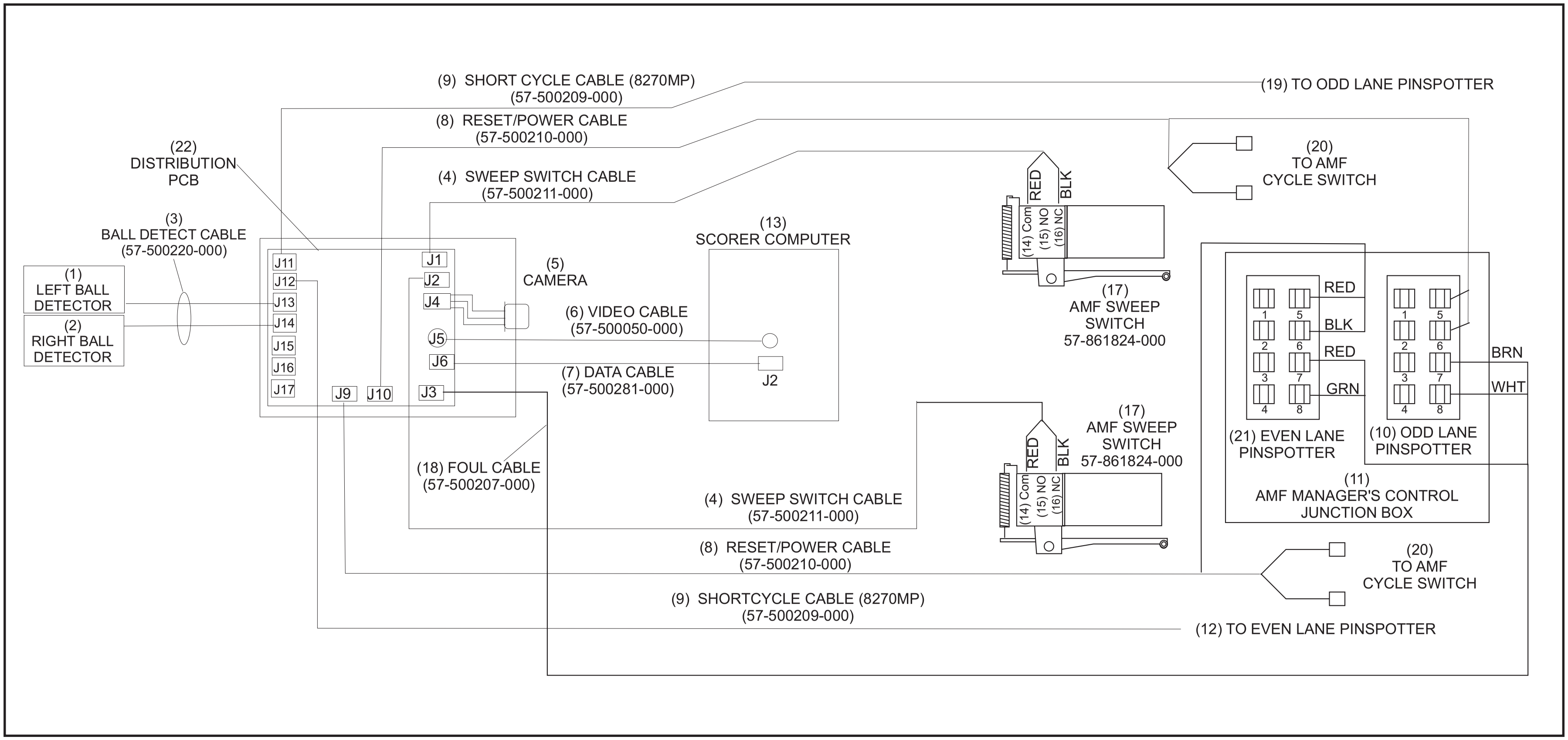
A, A2 Pinsetter Vector wiring

(1) LEFT BALL DETECTOR
(2) RIGHT BALL DETECTOR
(3) BALL DETECT CABLE (57-500220-000)
(4) PINSETTER RESET/POWER/SWEEP CABLE (57-500206-000)
(5) CAMERA
(6) VIDEO CABLE (57-500050-000)
(7) DATA CABLE (57-500281-000)
(8) ODD
(9) EVEN
(10) FOUL CABLE (57-500207-000)
(11) PINSETTER RESET/POWER/SWEEP CABLE (57-500206-000)
(12) FOUL UNIT
(13) SCORER COMPUTER
(14) LEFT PINSETTER
(15) ELECT. BOX
(16) POWER
(17) RESET
(18) RAKE DOWN SWITCH
(19) RIGHT PINSETTER
(20) DISTRIBUTOR PCB


(1)
LEFT BALL
DETECTOR
(2)
RIGHT BALL
DETECTOR
(3)
BALL DETECT CABLE
(57-500220-000)
(17)
DISTRIBUTION
PCB
J11
J12
J13
J14
J15
J16
J17
J9
J10
J3
J1
J2
J4
J5
J6
(4)
SWEEP SWITCH CABLE
(57-500211-000)
(5)
CAMERA
(6)
VIDEO CABLE
(57-500050-000)
(7)
DATA CABLE
(57-500281-000)
(13)
SCORER COMPUTER
J2
(10)
AMF SWEEP
SWITCH
57-861824-000
RED
BLK
(14) Com
(15) NO
(16) NC
(9)
SWEEP SWITCH CABLE
(57-500211-000)
(10)
AMF SWEEP
SWITCH
57-861824-000
RED
BLK
(14) Com
(15) NO
(16) NC
(11)
AMF8290XL
(12)
RESET/FOUL Y CABLE
(57-300841-000)
(8)
RESET/FOUL CABLE
(57-500212-000)

AMF 8290 Wiring

(1) LEFT BALL DETECTOR
(2) RIGHT BALL DETECTOR
(3) BALL DETECT CABLE (57-500220-000)
(4) SWEEP SWITCH CABLE (57-500211-000)
(5) CAMERA
(6) VIDEO CABLE (57-500050-000)
(7) DATA CABLE (57-500281-000)
(8) RESET FOUL CABLE (57-500212-000)
(9) SWEEP SWITCH CABLE (57-500211-000)
(10) AMF SWEEP SWITCH (57-861824-000)
(11) AMF 8290XL
(12) RESET/FOUL “Y” CABLE (57-300841-000)
(13) SCORER COMPUTER
(14) COM
(15) NORMALLY OPEN
(16) NORMALLY CLOSED
(17) DISTRIBUTOR PCB


(9) SHORT CYCLE CABLE (8270MP)
(57-500209-000)
(19) TO ODD LANE PINSPOTTER
(8) RESET/POWER CABLE
(57-500210-000)
(22)
DISTRIBUTION
PCB
(4) SWEEP SWITCH CABLE
(57-500211-000)
(20)
TO AMF
CYCLE SWITCH
(3)
BALL DETECT CABLE
(57-500220-000)
(13)
SCORER COMPUTER
RED
BLK
(14) Com
(15) NO
(16) NC
(1)
LEFT BALL
DETECTOR
(2)
RIGHT BALL
DETECTOR
J11
J12
J13
J14
J15
J16
J17
J9
J10
J1
J2
J4
J5
J6
J3
(5)
CAMERA
(6) VIDEO CABLE
(57-500050-000)
(7) DATA CABLE
(57-500281-000)
J2
(17)
AMF SWEEP
SWITCH
57-861824-000
RED
BLK
RED
GRN
BRN
WHT
1
2
3
4
5
6
7
8
(21) EVEN LANE
PINSPOTTER
(10) ODD LANE
PINSPOTTER
(11)
AMF MANAGER'S CONTROL
JUNCTION BOX
(18) FOUL CABLE
(57-500207-000)
(4) SWEEP SWITCH CABLE
(57-500211-000)
(8) RESET/POWER CABLE
(57-500210-000)
(9) SHORTCYCLE CABLE (8270MP)
(57-500209-000)
(12) TO EVEN LANE PINSPOTTER

AMF 8270 Wiring

(1) LEFT BALL DETECTOR
(2) RIGHT BALL DETECTOR
(3) BALL DETECT CABLE (57-500220-000)
(4) SWEEP SWITCH CABLE (57-500211-000)
(5) CAMERA
(6) VIDEO CABLE (57-500050-000)
(7) DATA CABLE (57-500281-000)
(8) RESET/POWER CABLE (57-500210-000)
(9) SHORT CYCLE CABLE (57-500209-000)
(10) ODD LANE PINSPOTTER
(11) AMF MANAGER'S CONTROL JUNCTION BOX
(12) TO EVEN LANE PINSPOTTER
(13) SCORER COMPUTER
(14) COM
(15) NORMALLY OPEN
(16) NORMALLY CLOSED
(17) AMF SWEEP SWITCH (57-861824-000)
(18) FOUL CABLE (57-500207-000)
(19) TO ODD LANE PINSPOTTER
(20) TO AMF CYCLE SWITCH
(21) EVEN LANE PINSPOTTER
(22) DISTRIBUTION PCB

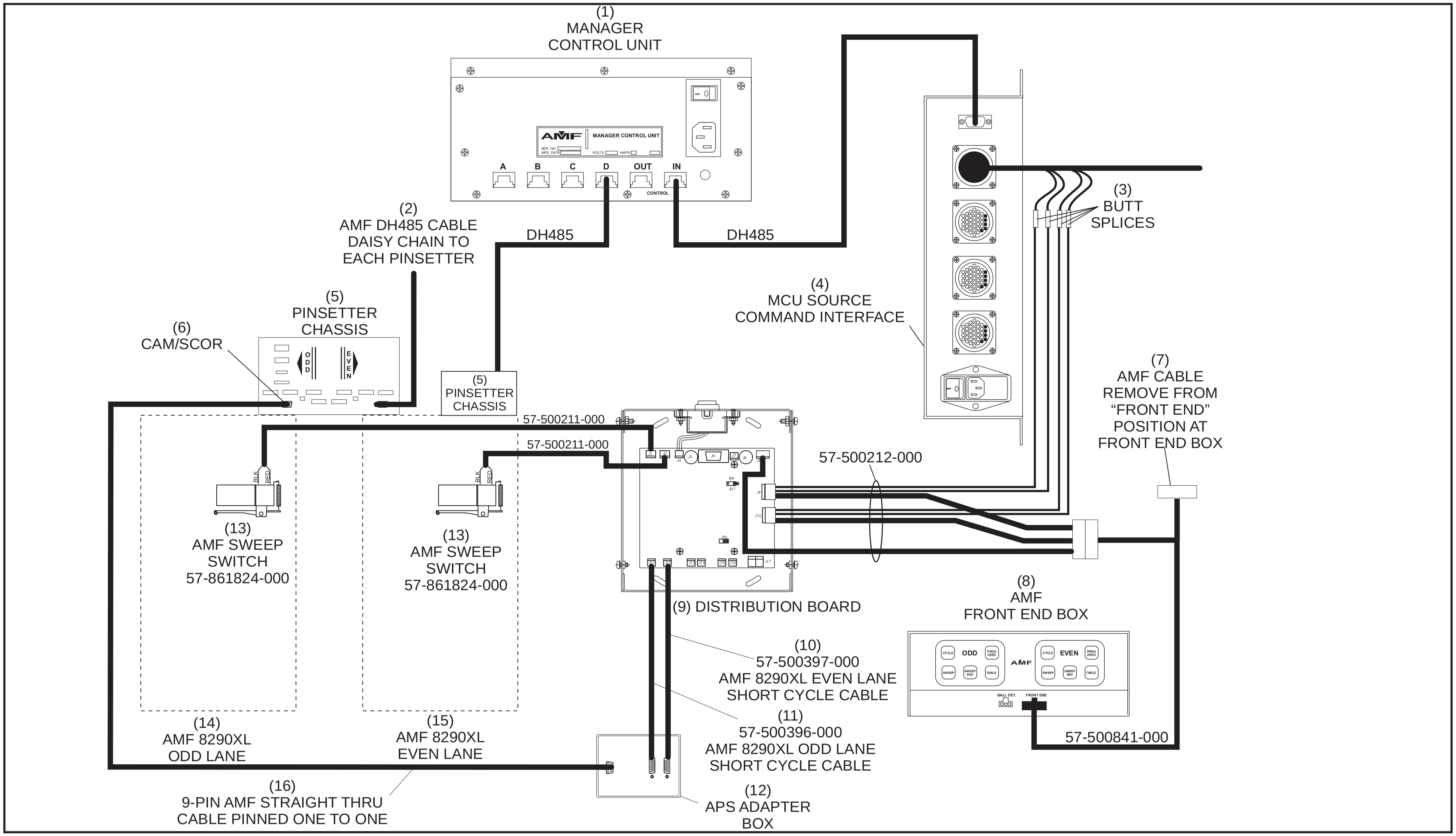
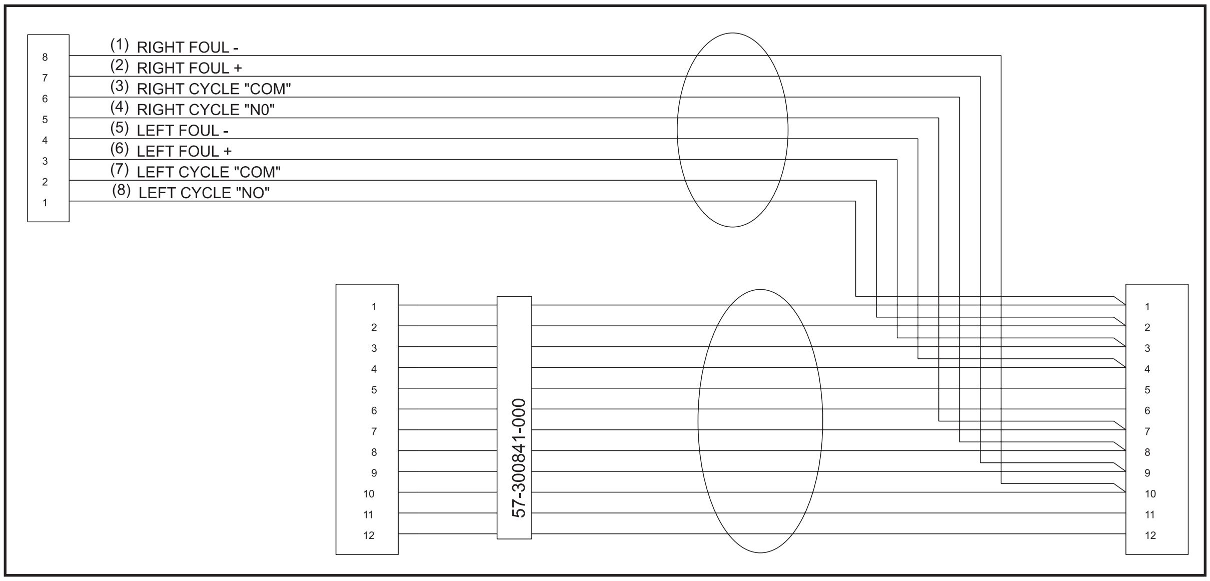

(1) MANAGER CONTROL UNIT
MANAGER CONTROL UNIT
A
B
C
D
OUT
IN
CONTROL
DH485
DH485
(2) AMF DH485 CABLE DAISY CHAIN TO EACH PINSETTER
(3) BUTT SPLICES
(4) MCU SOURCE COMMAND INTERFACE
(5) PINSETTER CHASSIS
(5) PINSETTER CHASSIS
(6) CAM/SCOR
ODD
EVEN
(7) AMF CABLE REMOVE FROM “FRONT END” POSITION AT FRONT END BOX
57-500211-000
57-500211-000
57-500212-000
BLK
RED
BLK
RED
(13) AMF SWEEP SWITCH 57-861824-000
(13) AMF SWEEP SWITCH 57-861824-000
(8) AMF FRONT END BOX
CYCLE
ODD
PROG ZERO
SWEEP
SWEEP REV
TABLE
CYCLE
EVEN
PROG ZERO
SWEEP
SWEEP REV
TABLE
BALL DET.
FRONT END
(9) DISTRIBUTION BOARD
(10) 57-500397-000 AMF 8290XL EVEN LANE SHORT CYCLE CABLE
(11) 57-500396-000 AMF 8290XL ODD LANE SHORT CYCLE CABLE
57-500841-000
(14) AMF 8290XL ODD LANE
(15) AMF 8290XL EVEN LANE
(16) 9-PIN AMF STRAIGHT THRU CABLE PINNED ONE TO ONE
(12) APS ADAPTER BOX

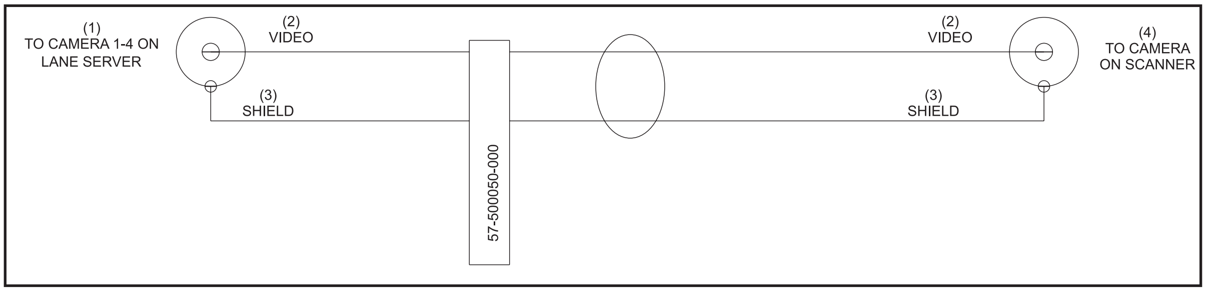
Figure 102. AMF 8290XL Interface Overview

(1) MANAGER CONTROL UNIT
(2) AMF DH485 CABLE DAISY CHAIN TO EACH PINSETTER
(3) BUTT SPLICES
(4) MCU SOURCE COMMAND INTERFACE
(5) PINSETTER CHASSIS
(6) CAM/SCOR
(7) AMF CABLE REMOVE FROM “FRONT END” POSITION AT FRONT END BOX
(8) AMF FRONT END BOX
(9) DISTRIBUTION BOARD
(10) 57-500397-000 AMF 8290XL EVEN LANE SHORT CYCLE CABLE
(11) 57-500396-000 AMF 8290XL ODD LANE SHORT CYCLE CABLE
(12) APS ADAPTER BOX
(13) AMF SWITCH 57-861824-000
(14) AMF 8290XL ODD LANE
(15) AMF 8290XL EVEN LANE
(16) 9-PIN AMF STRAIGHT THRU CABLE PINNED ONE TO ONE


(1) RIGHT FOUL -
(2) RIGHT FOUL +
(3) RIGHT CYCLE "COM"
(4) RIGHT CYCLE "N0"
(5) LEFT FOUL -
(6) LEFT FOUL +
(7) LEFT CYCLE "COM"
(8) LEFT CYCLE "NO"
8
7
6
5
4
3
2
1
1
2
3
4
5
6
7
8
9
10
11
12
57-300841-000
1
2
3
4
5
6
7
8
9
10
11
12

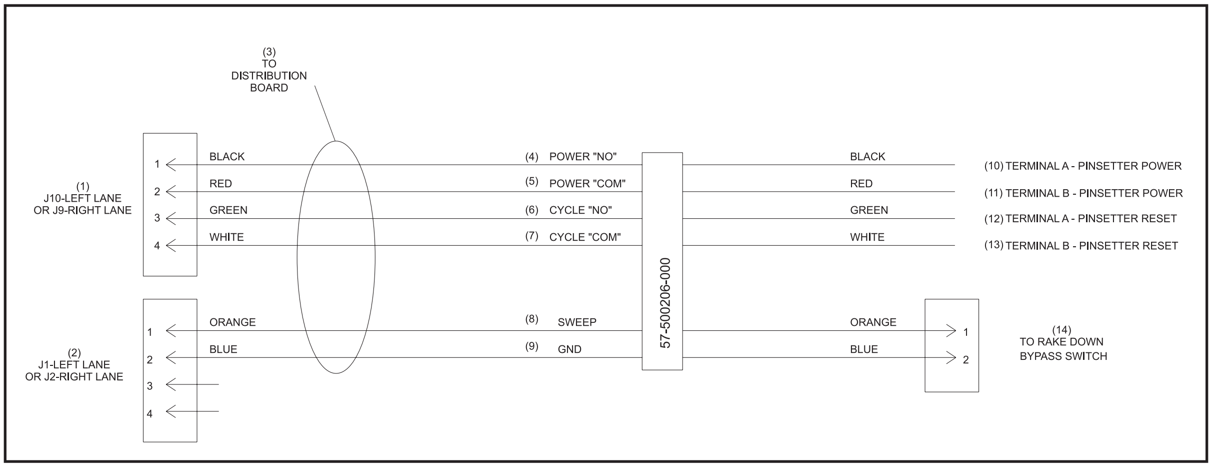
AMF 8290XL Foul/Reset "Y" Cable (Part No. 57-300841-000)

(1) RIGHT FOUL -
(2) RIGHT FOUL +
(3) RIGHT CYCLE "COM"
(4) RIGHT CYCLE "NO"
(5) LEFT FOUL-
(6) LEFT FOUL+
(7) LEFT CYCLE "COM"
(8) LEFT CYCLE "NO"


(1)
TO CAMERA 1-4 ON
LANE SERVER
(2)
VIDEO
(3)
SHIELD
57-500050-000
(2)
VIDEO
(3)
SHIELD
(4)
TO CAMERA
ON SCANNER

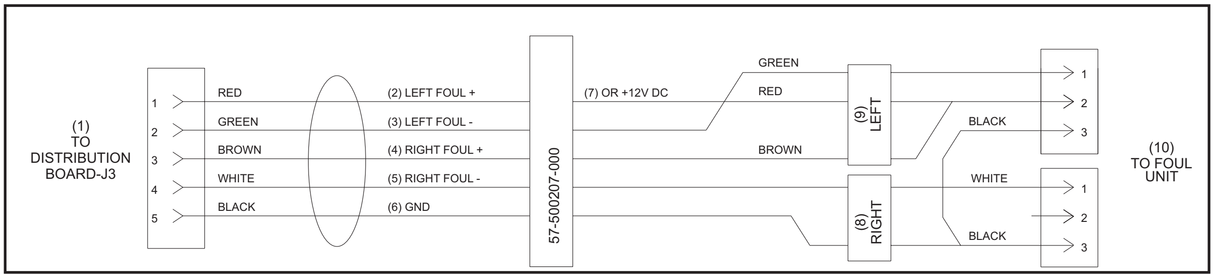
Camera Video Cable (Part No. 57-500050-000)

(1) TO CAMERA 1-4 ON LANE SERVER
(2) VIDEO
(3) SHIELD
(4) TO CAMERA ON SCANNER


(3) TO DISTRIBUTION BOARD
(1) J10-LEFT LANE OR J9-RIGHT LANE
1
2
3
4
BLACK
RED
GREEN
WHITE
(4) POWER "NO"
(5) POWER "COM"
(6) CYCLE "NO"
(7) CYCLE "COM"
57-500206-000
BLACK
RED
GREEN
WHITE
(10) TERMINAL A - PINSETTER POWER
(11) TERMINAL B - PINSETTER POWER
(12) TERMINAL A - PINSETTER RESET
(13) TERMINAL B - PINSETTER RESET
(2) J1-LEFT LANE OR J2-RIGHT LANE
1
2
3
4
ORANGE
BLUE
(8) SWEEP
(9) GND
ORANGE
BLUE
1
2
(14) TO RAKE DOWN BYPASS SWITCH

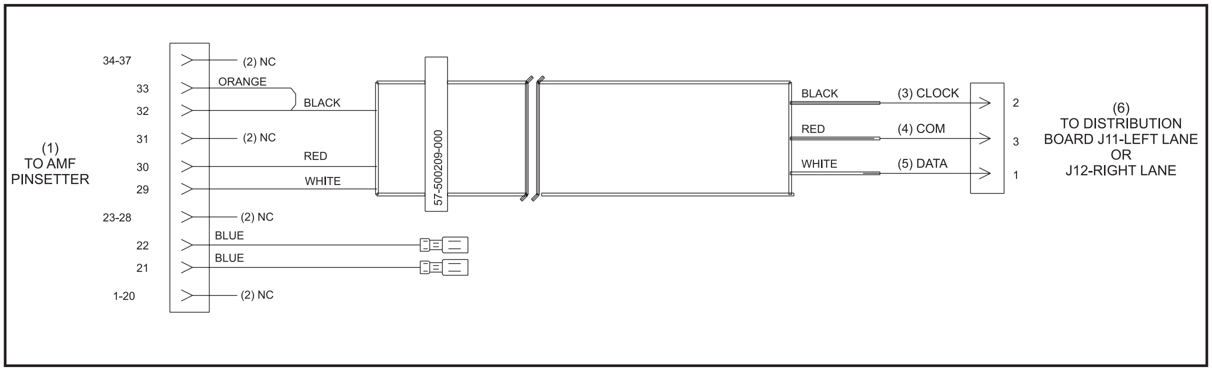
A, A-2 Reset/Power/Sweep Cable (Part No. 57-500206-000)

(1) J10 LEFT LANE OR J9 RIGHT LANE
(2) J1-LEFT LANE OR J2-RIGHT LANE
(3) TO DISTRIBUTION BOARD
(4) POWER ”NO”
(5) POWER “COM”
(6) CYCLE “NO”
(7) CYCLE “COM”
(8) SWEEP
(9) GROUND
(10) TERMINAL A - PINSETTER POWER
(11) TERMINAL B - PINSETTER POWER
(12) TERMINAL A - PINSETTER RESET
(13) TERMINAL B - PINSETTER RESET


(1) TO DISTRIBUTION BOARD-J3
1
2
3
4
5
RED
GREEN
BROWN
WHITE
BLACK
(2) LEFT FOUL +
(3) LEFT FOUL -
(4) RIGHT FOUL +
(5) RIGHT FOUL -
(6) GND
57-500207-000
(7) OR +12V DC
GREEN
RED
BROWN
(9) LEFT
(8) RIGHT
BLACK
WHITE
BLACK
1
2
3
1
2
3
(10) TO FOUL UNIT

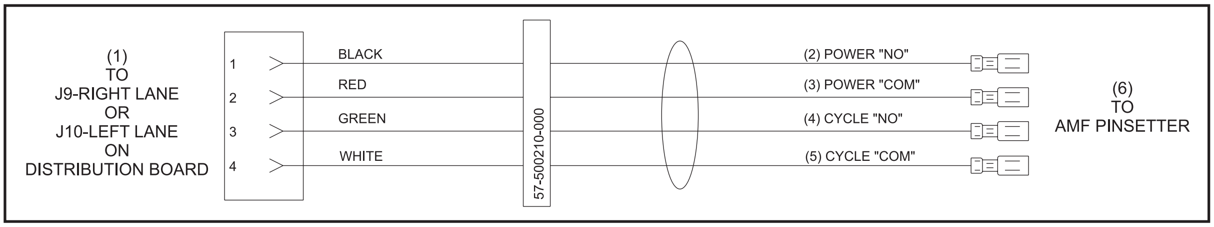
Foul Cable (Part No. 57-500207-000)

(1) TO DISTRIBUTION BOARD-J3
(2) LEFT FOUL +
(3) LEFT FOUL -
(4) RIGHT FOUL +
(5) RIGHT FOUL-
(6) GROUND
(7) OR +12VDC
(8) RIGHT
(9) LEFT
(10) TO FOUL UNIT


(1) TO AMF PINSETTER
34-37
33
32
31
30
29
23-28
22
21
1-20
(2) NC
ORANGE
BLACK
(2) NC
RED
WHITE
(2) NC
BLUE
BLUE
(2) NC
57-500209-000
BLACK
RED
WHITE
(3) CLOCK
(4) COM
(5) DATA
2
3
1
(6) TO DISTRIBUTION BOARD J11-LEFT LANE OR J12-RIGHT LANE

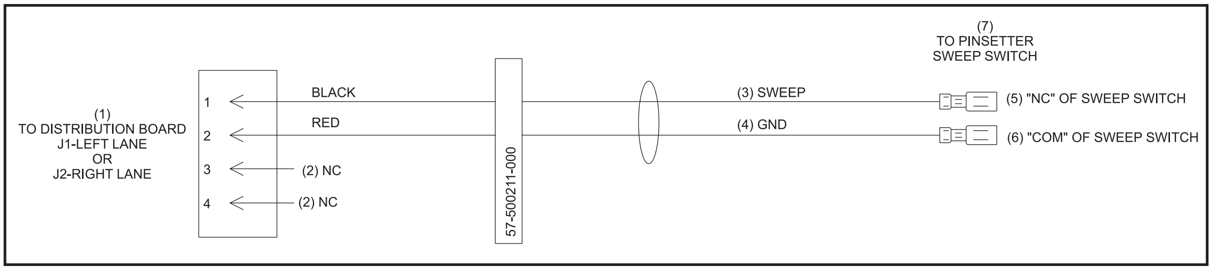
AMF 8270MP Short Cycle Cable (Part No. 57-500209-000)

(1) TO AMF PINSETTER
(2) NO CONNECTION
(3) CLOCK
(4) COM
(5) DATA
(6) TO DISTRIBUTION BOARD J11-LEFT LANE OR J12-RIGHT LANE


(1)
TO
J9-RIGHT LANE
OR
J10-LEFT LANE
ON
DISTRIBUTION BOARD
1
2
3
4
BLACK
RED
GREEN
WHITE
57-500210-000
(2) POWER "NO"
(3) POWER "COM"
(4) CYCLE "NO"
(5) CYCLE "COM"
(6)
TO
AMF PINSETTER

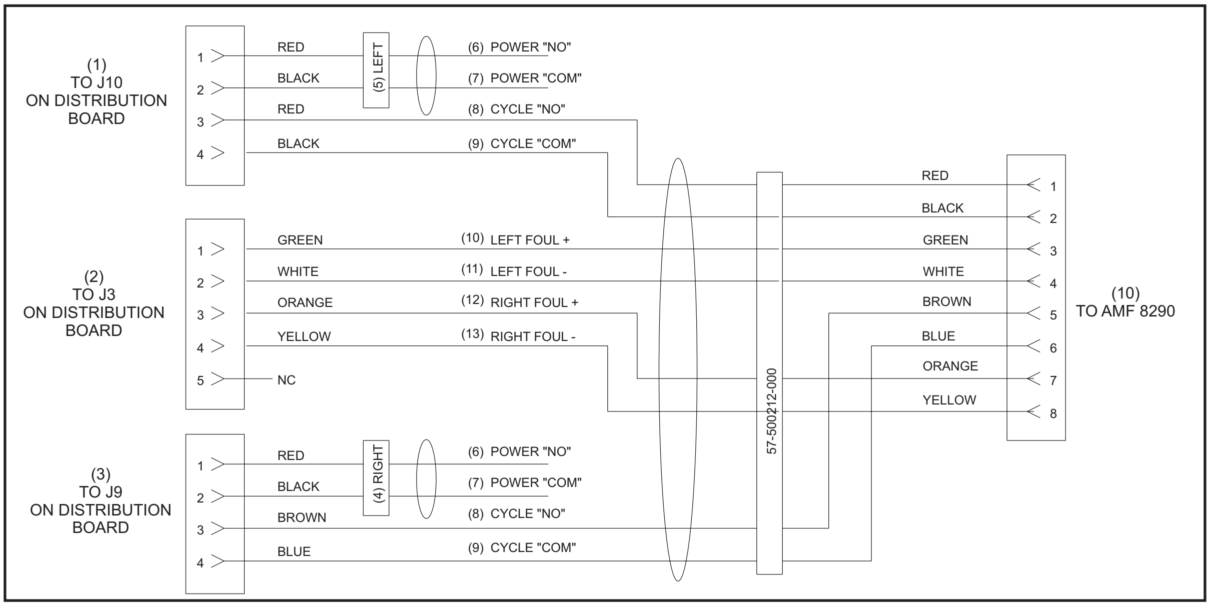
AMF 8230 /8270 Power/Reset Cable (Part No. 57-500210-000)

(1) TO J9-RIGHT LANE OR J10 ON DISTRIBUTION BOARD
(2) POWER “NO”
(3) POWER “COM”
(4) CYCLE “NO”
(5) CYCLE “COM”
(6) TO AMF PINSETTER


(1)
TO DISTRIBUTION BOARD
J1-LEFT LANE
OR
J2-RIGHT LANE
1
2
3
4
BLACK
RED
(2) NC
(2) NC
57-500211-000
(3) SWEEP
(4) GND
(7)
TO PINSETTER
SWEEP SWITCH
(5) "NC" OF SWEEP SWITCH
(6) "COM" OF SWEEP SWITCH

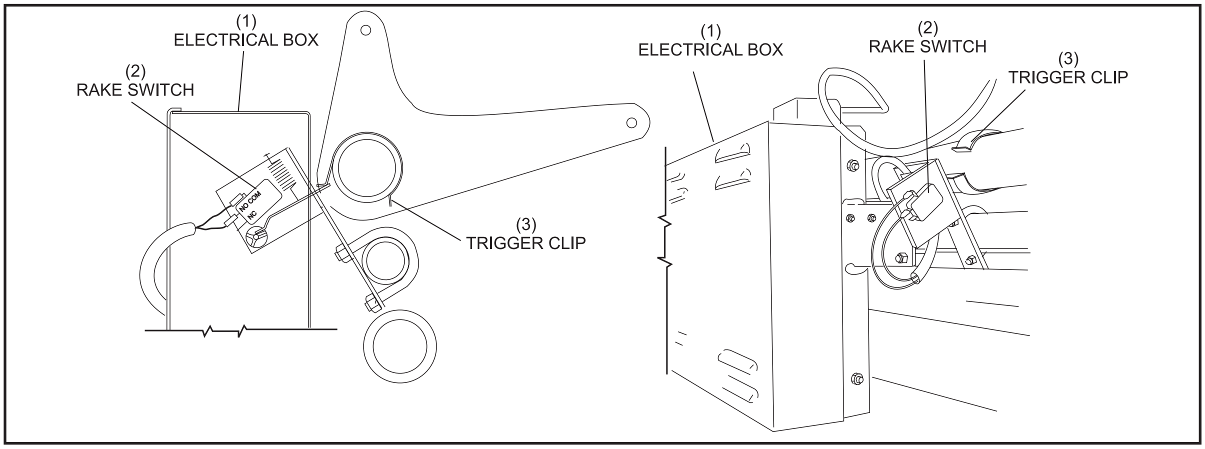
AMF Sweep Switch Cable (Part No. 57-500211-000)

(1) TO DISTRIBUTION BOARD J1-LEFT LANE OR J2-RIGHT LANE
(2) NO CONNECTION
(3) SWEEP
(4) GROUND
(5) NORMALLY CLOSED OF SWEEP
(6) COMMON OF SWEEP SWITCH
(7) TO PINSETTER SWEEP SWITCH


(1)
TO J10
ON DISTRIBUTION
BOARD
1
2
3
4
RED
BLACK
RED
BLACK
(5) LEFT
(6) POWER "NO"
(7) POWER "COM"
(8) CYCLE "NO"
(9) CYCLE "COM"
(2)
TO J3
ON DISTRIBUTION
BOARD
1
2
3
4
5
GREEN
WHITE
ORANGE
YELLOW
NC
(10) LEFT FOUL +
(11) LEFT FOUL -
(12) RIGHT FOUL +
(13) RIGHT FOUL -
(3)
TO J9
ON DISTRIBUTION
BOARD
1
2
3
4
RED
BLACK
BROWN
BLUE
(4) RIGHT
(6) POWER "NO"
(7) POWER "COM"
(8) CYCLE "NO"
(9) CYCLE "COM"
57-500212-000
RED
BLACK
GREEN
WHITE
BROWN
BLUE
ORANGE
YELLOW
1
2
3
4
5
6
7
8
(10)
TO AMF 8290

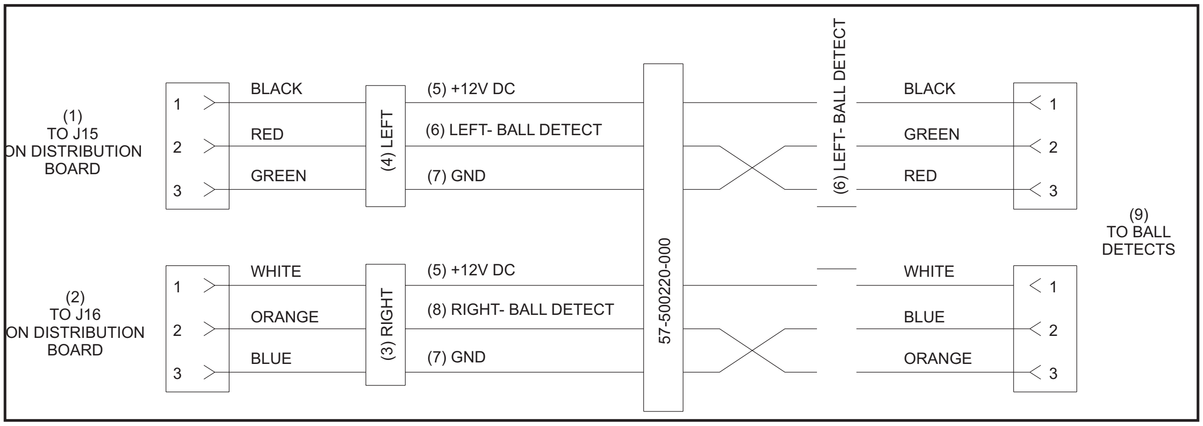
AMF 8290XL Foul/Reset Cable (Part No. 57-500212-000)

(1) TO J10 ON DISTRIBUTION BOARD
(2) TO J3 ON DISTRIBUTION BOARD
(3) TO J9 ON DISTRIBUTION BOARD
(4) RIGHT
(5) LEFT
(6) POWER “NO”
(7) POWER “COM”
(8) CYCLE “NO”
(9) CYCLE “COM”
(10) TO AMF 8290


(1)
ELECTRICAL BOX
(2)
RAKE SWITCH
NO COM
NC
(3)
TRIGGER CLIP
(1)
ELECTRICAL BOX
(2)
RAKE SWITCH
(3)
TRIGGER CLIP

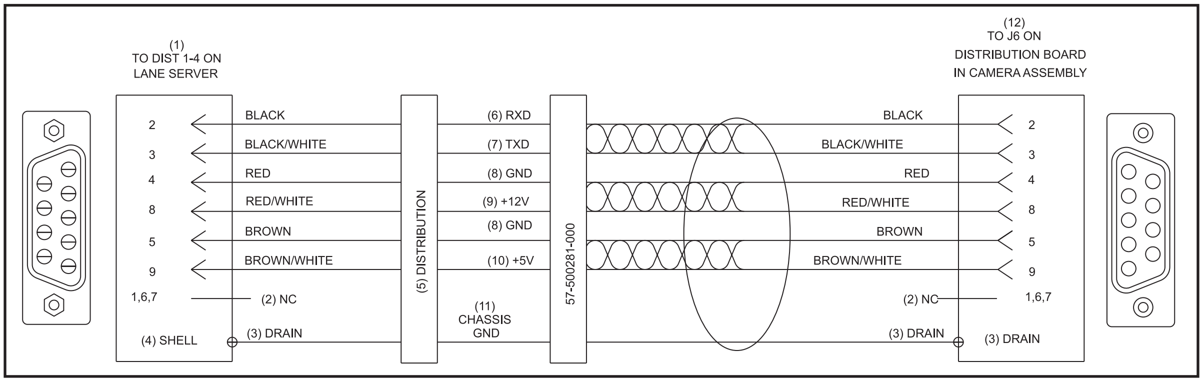
Brunswick A Pinsetter Sweep Switch Cable (Part No. 57-500213-000)

(1) ELECTRICAL BOX
(2) RAKE SWITCH
(3) TRIGGER CLIP


(1)
TO J15
ON DISTRIBUTION
BOARD
1
2
3
BLACK
RED
GREEN
(4) LEFT
(5) +12V DC
(6) LEFT- BALL DETECT
(7) GND
57-500220-000
(6) LEFT- BALL DETECT
BLACK
GREEN
RED
1
2
3
(9)
TO BALL
DETECTS
(2)
TO J16
ON DISTRIBUTION
BOARD
1
2
3
WHITE
ORANGE
BLUE
(3) RIGHT
(5) +12V DC
(8) RIGHT- BALL DETECT
(7) GND
WHITE
BLUE
ORANGE
1
2
3

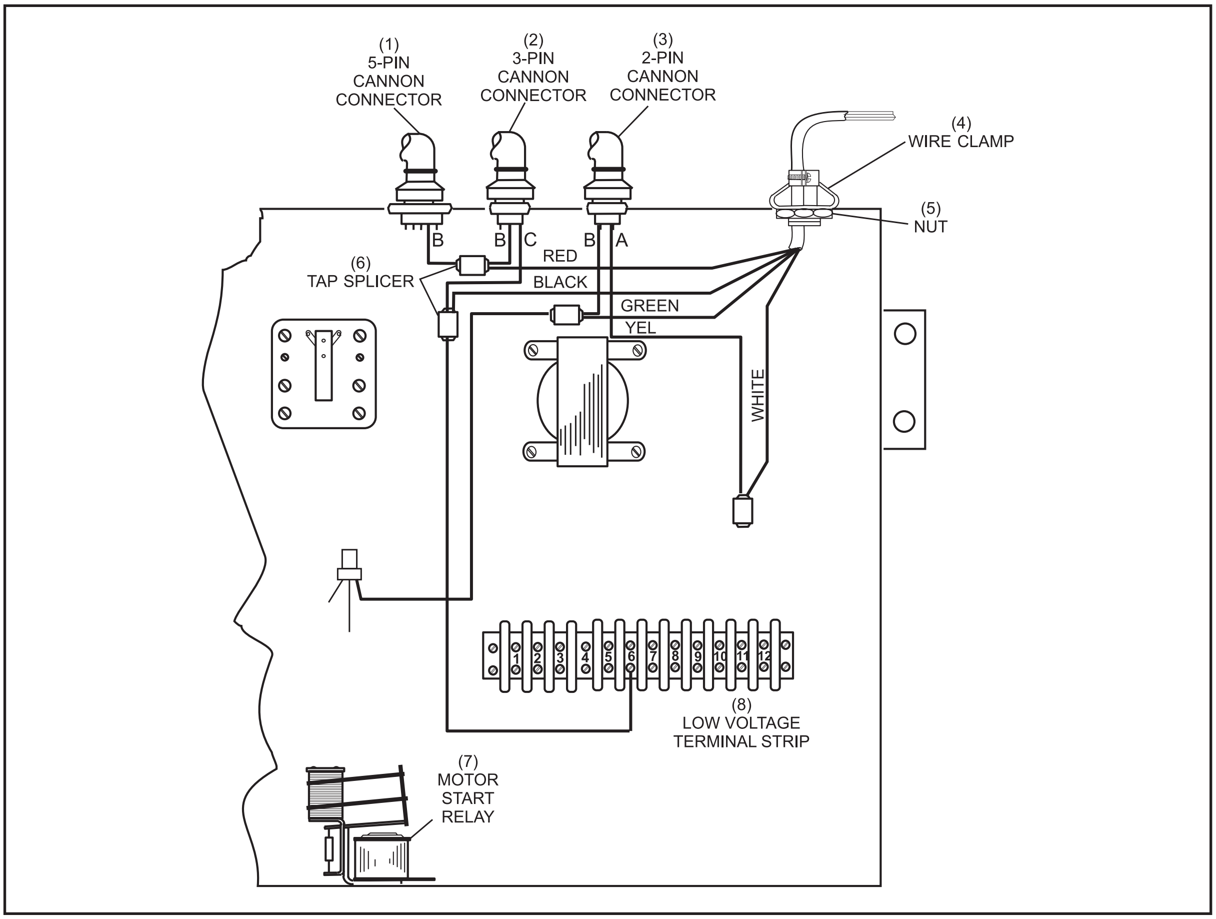
Ball Detect Cable (Part No. 57-500220-000)

(1) TO J15 ON DISTRIBUTION BOARD
(2) TO J16 ON DISTRIBUTION BOARD
(3) RIGHT
(4) LEFT
(5) +12 VOLTS DIRECT CURRENT
(6) LEFT BALL DETECT
(7) GROUND
(8) RIGHT BALL DETECT
(9) TO BALL DETECTS


(1)
TO DIST 1-4 ON
LANE SERVER
2
3
4
8
5
9
1,6,7
(4) SHELL
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) NC
(3) DRAIN
(5) DISTRIBUTION
(6) RXD
(7) TXD
(8) GND
(9) +12V
(8) GND
(10) +5V
(11)
CHASSIS
GND
57-500281-000
(12)
TO J6 ON
DISTRIBUTION BOARD
IN CAMERA ASSEMBLY
BLACK
BLACK/WHITE
RED
RED/WHITE
BROWN
BROWN/WHITE
(2) NC
(3) DRAIN
2
3
4
8
5
9
1,6,7
(3) DRAIN

Distributor PCB to Scorer Computer Data Cable (Part No. 57-500281-000)

(1) TO DIST 1-4 ON LANE SERVER
(2) NO CONNECTION
(3) DRAIN
(4) SHELL
(5) DISTRIBUTION
(6) RXD
(7) TXD
(8) GROUND
(9) +12V
(10) +5V
(11) CHASSIS GROUND
(12) TO J6 ON DISTRIBUTION BOARD IN CAMERA ASSEMBLY


(1) 5-PIN CANNON CONNECTOR
(2) 3-PIN CANNON CONNECTOR
(3) 2-PIN CANNON CONNECTOR
(4) WIRE CLAMP
(5) NUT
B
B
C
B
A
RED
BLACK
GREEN
YEL
(6) TAP SPLICER
WHITE
1
2
3
4
5
6
7
8
9
10
11
12
(8) LOW VOLTAGE TERMINAL STRIP
(7) MOTOR START RELAY

A-2 Pinsetter Wiring

(1) 5-PIN CANNON CONNECTOR
(2) 3-PIN CANNON CONNECTOR
(3) 2-PIN CANNON CONNECTOR
(4) WIRE CLAMP
(5) NUT
(6) TAP SPLICER
(7) MOTOR START RELAY
(8) LOW VOLTAGE TERMINAL STRIP

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GLOSSARY OF TERMS

To better understand the information presented in this section you should better familiarize yourself with these terms.

Display Controller - A device used provide HD scorer video and control for the overhead monitors on a lane pair.

Splitter - A device used to split a tv or cable signal into multiple signals of equal strength.

Tap - A device, similar to a switch, used to split a tv or cable signal into multiple signals. A tap differs from a splitter in that a tap splits the signal, but not evenly. This allows a specific amount of the signal to be directed to one monitor while the majority of the signal can continue to additional monitors.

Head Unit - See TV distribution center.

Modulator - Device(s) in the TV Distribution Center that assign a TV channel to the signal received from an A/V source such as a DVD player, cable box, or satellite receiver. The signal can then be viewed on the overhead monitors by tuning the monitor to the assigned channel.

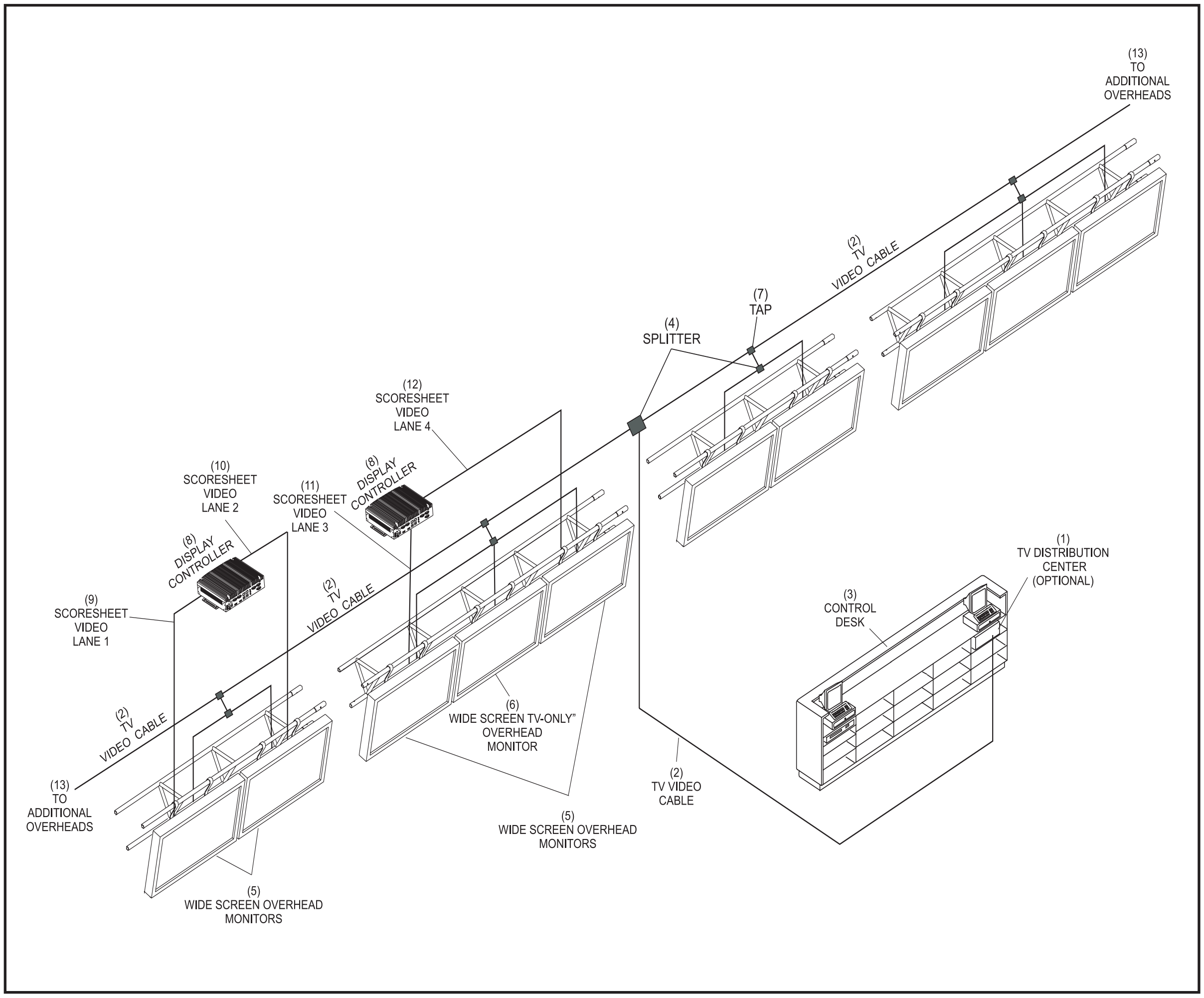
TV-Only Monitor - A monitor that is used to display only the video sent from the TV Distribution Center. This monitor cannot display bowler's scoresheet.

TV Distribution Center - A audio/ video component usually located at the desk that accepts A/V signals from various sources such as DVD players, Cable boxes, or satellite receivers and assigns a unique "TV channel" to each of them. The sources can then be viewed at the overhead monitors by tuning the monitor to the desired channel.

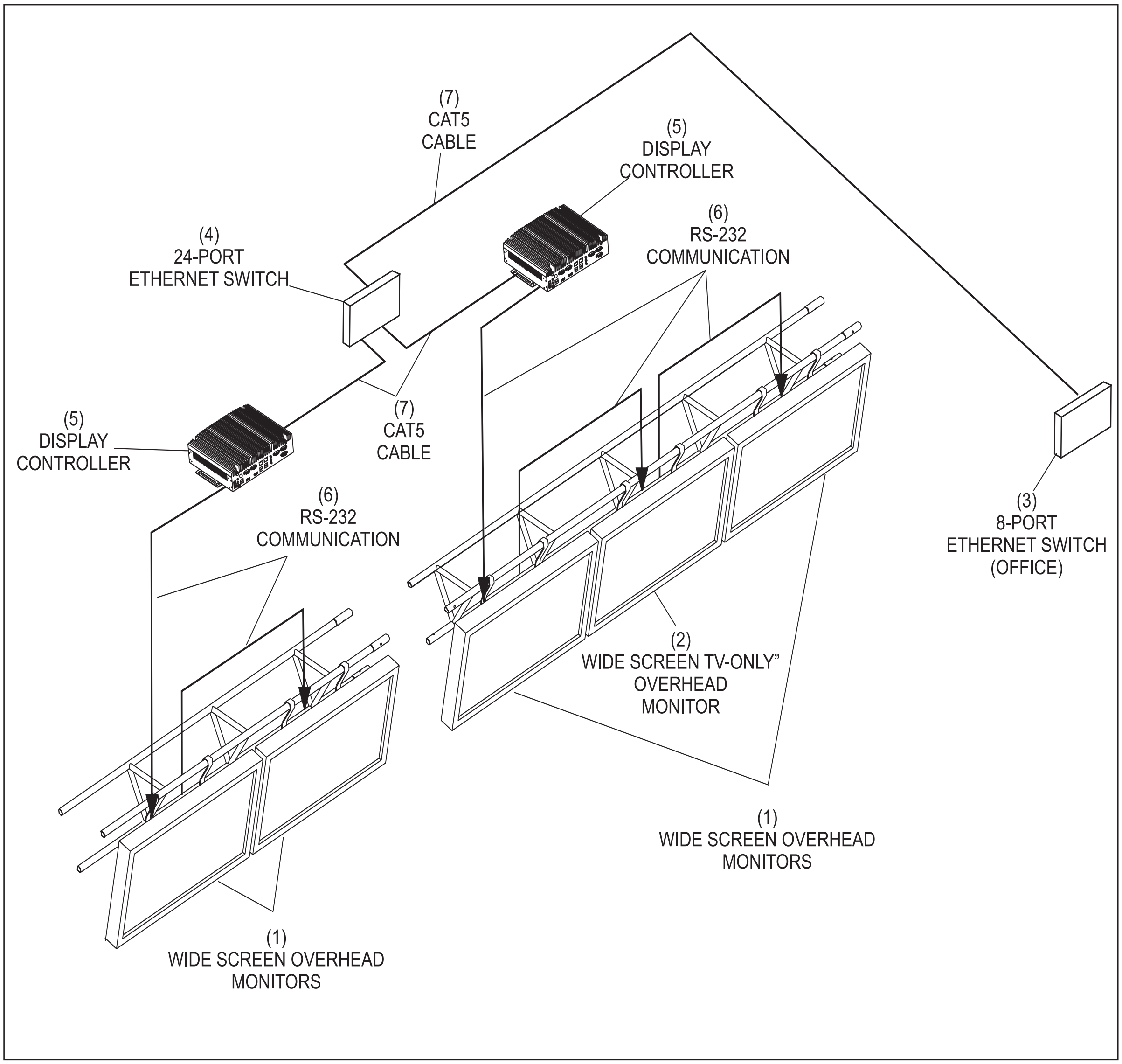
OVERVIEW

With Brunswick Vector HD scoring system is capable of providing both high definition scorer and TV video to the LED overhead monitors. The system also provides the ability to turn the overhead monitors on/off and switch the monitors between the scoresheet and TV video through either the control desk or by using the remote control that comes with the monitors.

An interface box called a Display Controller receives scoring information from its designated scorer computer through a network connection and provides the high definition scorer video and monitor control signals for the monitor. Optional high definition TV video is provided to the overhead screens through coaxial cables originated at the TV distribution center (Head Unit). Refer to figures titled *Vector HD Video and Vector HD Monitor Control.*


(13) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(7) TAP
(4) SPLITTER
(12) SCORESHEET VIDEO LANE 4
(10) SCORESHEET VIDEO LANE 2
(8) DISPLAY CONTROLLER
(11) SCORESHEET VIDEO LANE 3
(8) DISPLAY CONTROLLER
(1) TV DISTRIBUTION CENTER (OPTIONAL)
(9) SCORESHEET VIDEO LANE 1
(2) TV VIDEO CABLE
(3) CONTROL DESK
(6) WIDE SCREEN TV-ONLY" OVERHEAD MONITOR
(2) TV VIDEO CABLE
(13) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(5) WIDE SCREEN OVERHEAD MONITORS
(5) WIDE SCREEN OVERHEAD MONITORS

Vector HD Video

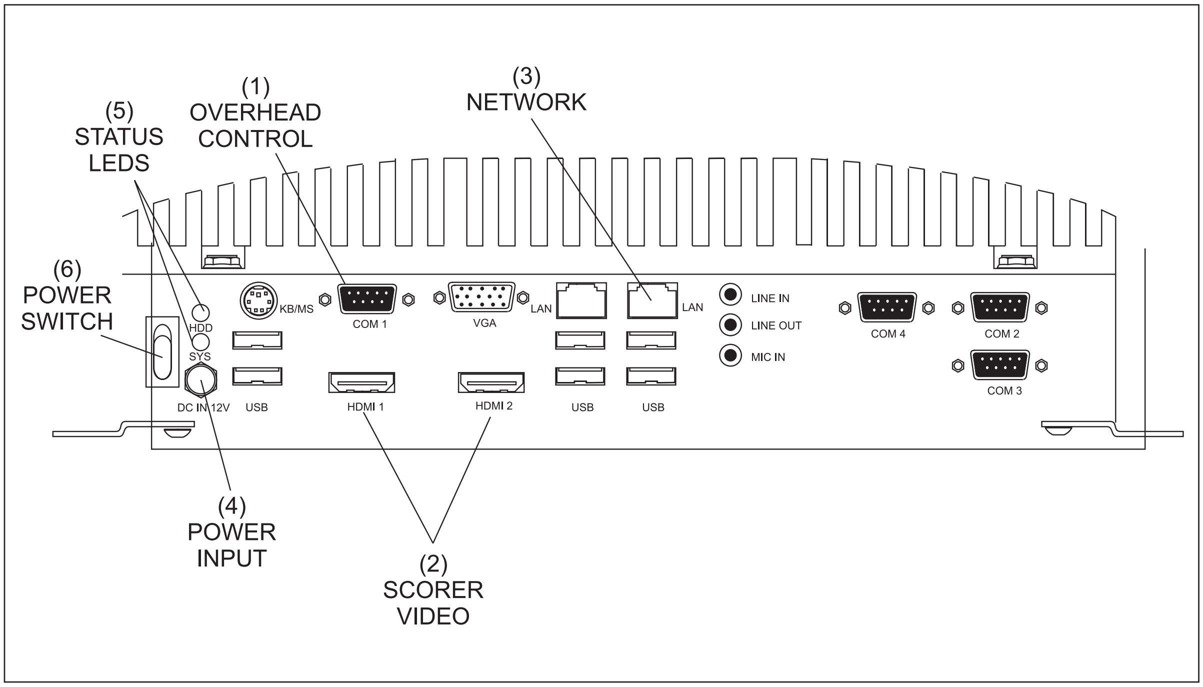

(7)
CAT5
CABLE
(5)
DISPLAY
CONTROLLER
(6)
RS-232
COMMUNICATION
(4)
24-PORT
ETHERNET SWITCH
(5)
DISPLAY
CONTROLLER
(7)
CAT5
CABLE
(6)
RS-232
COMMUNICATION
(3)
8-PORT
ETHERNET SWITCH
(OFFICE)
(2)
WIDE SCREEN TV-ONLY"
OVERHEAD
MONITOR
(1)
WIDE SCREEN OVERHEAD
MONITORS
(1)
WIDE SCREEN OVERHEAD
MONITORS

Vector HD Control

DISPLAY CONTROLLER

Connections

The Display Controller receives scoring information from its designated scorer computer through a network connection. Using this information it provides the high definition scorer video to the monitor for a lane pair using HDMI cables. It also provides on/off and video input control for the monitors thorough a serial ports (Com1).   Refer to the figure titled *Display Controller*


(5)
STATUS
LEDS
(1)
OVERHEAD
CONTROL
(3)
NETWORK
(6)
POWER
SWITCH
HDD
SYS
KB/MS
COM 1
VGA
LAN
LAN
LINE IN
LINE OUT
MIC IN
COM 4
COM 2
COM 3
DC IN 12V
USB
HDMI 1
HDMI 2
USB
USB
(4)
POWER
INPUT
(2)
SCORER
VIDEO

Display Controller

The function of the connections on the Display Controller are:

(1) **Overhead Control (Com 1) -** RS232 serial port that provides On/Off and video input control for the overheads.

(2) **Scorer Video (HDMI 1 / HDMI 2) -** HD Output connection to the LCD monitor for the scorer video. HDMI 1 - left (odd) lane video, HDMI 2 is right (even) lane video.

(3) **Network (LAN) -** Connection for the ethernet network. The Display Controller communicates with the Scorer Computer through this connection.

(4) **Power In (DC In 12v)** - Input for power coming from the power supply unit located behind the left lane overhead monitor.

(5) **Status LEDs (HDD/SYS)** - The HDD Led flashes to indicate when the hard drive inside the Display Controller is being accessed. The system LED lights when the Display Controller is "ON"

(6) **Power Switch -** This switch turns the Display Controller ON/OFF.

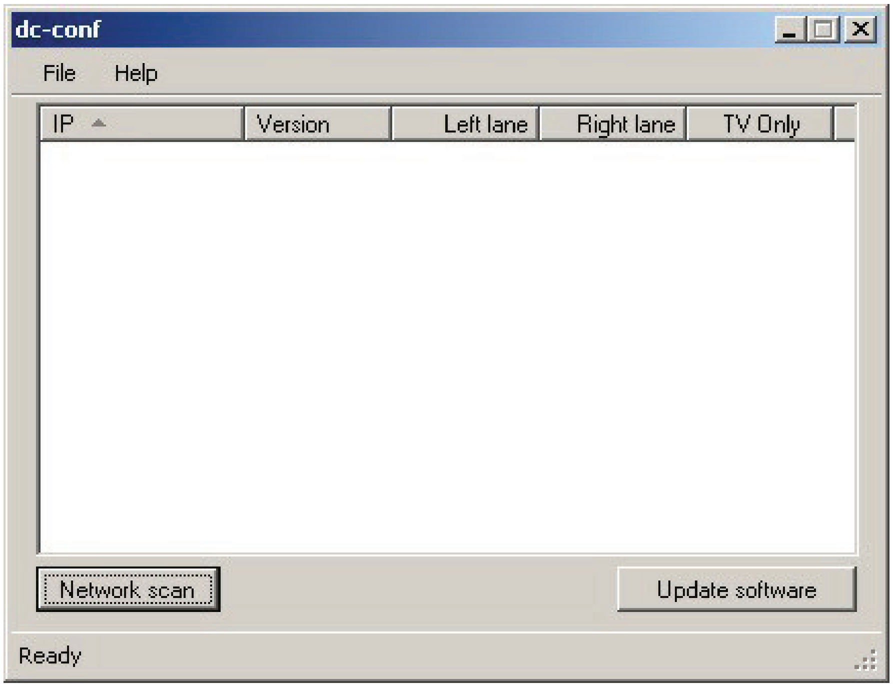
Configuration / Setup

Whenever the display controller is replaced or moved to another lane pair it must be configured so that it communicates with the correct scorer computer and is assigned the proper lane numbers. This configuration is done using a program called dc-config.exe located on the Vector/Vector Plus server.

To configure the Display Controller(s) perform the following steps:

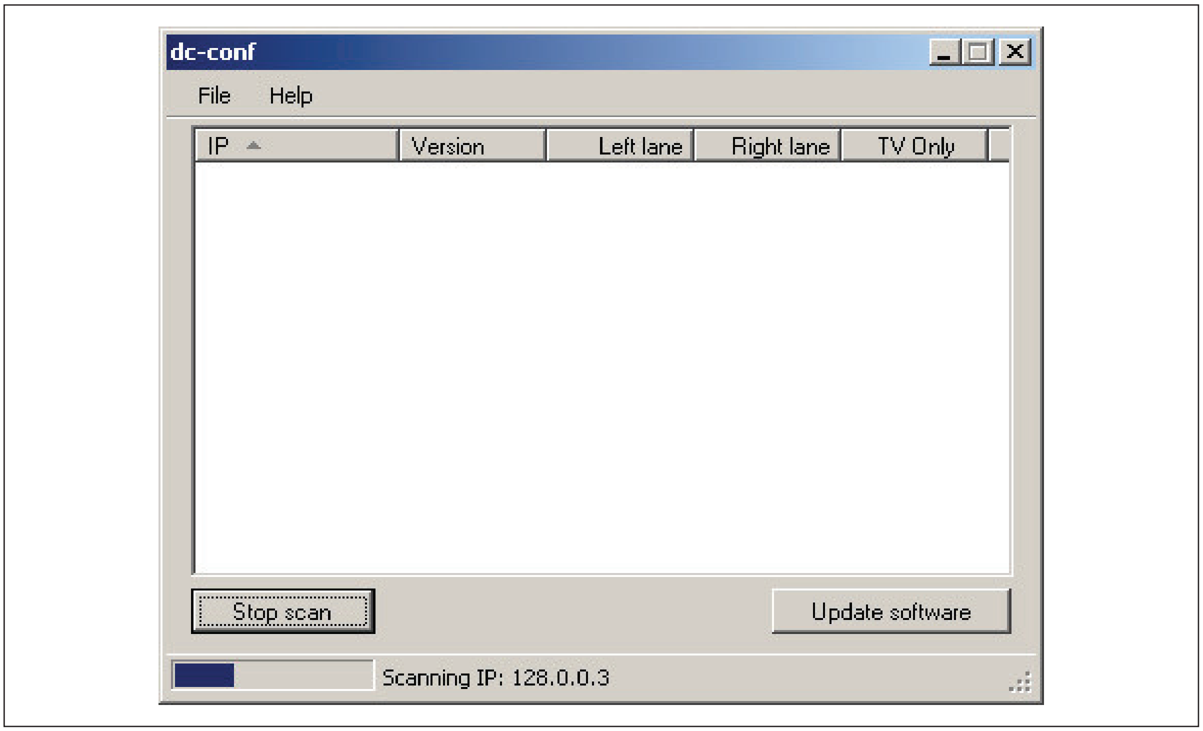
1. Make sure all scorer computers and Display Controllers are turned on and connected to the scoring network.

2. At the Windows desktop screen (the screen with the icons) of the Vector or Vector Plus SERVER computer, double-click on the *dc-conf.exe* icon. If the icon is not on the desktop screen the program can be found in the c:\brunswick\ds folder.



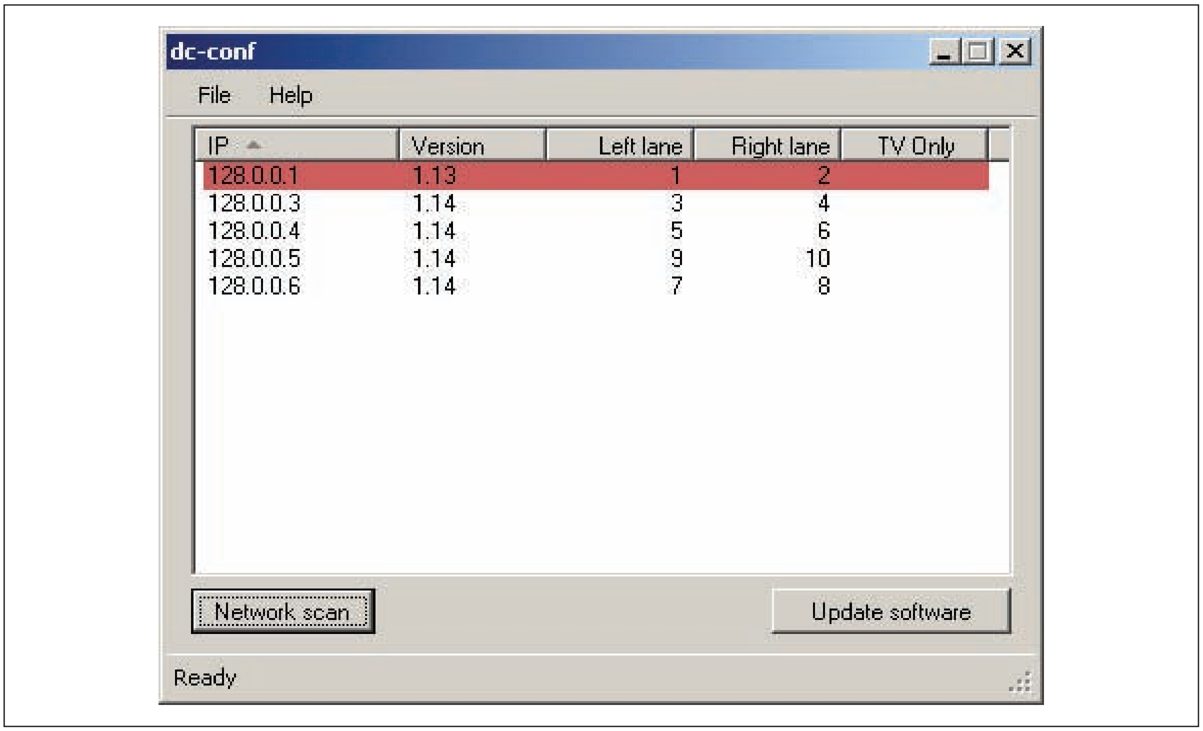
dc-config screen

3. Click “Network scan” to search for Display Controllers on the network and the scan to complete.


dc-conf
File
Help
IP
Version
Left lane
Right lane
TV Only
Stop scan
Update software

Scanning IP: 128.0.0.3

dc-config network scan in progress

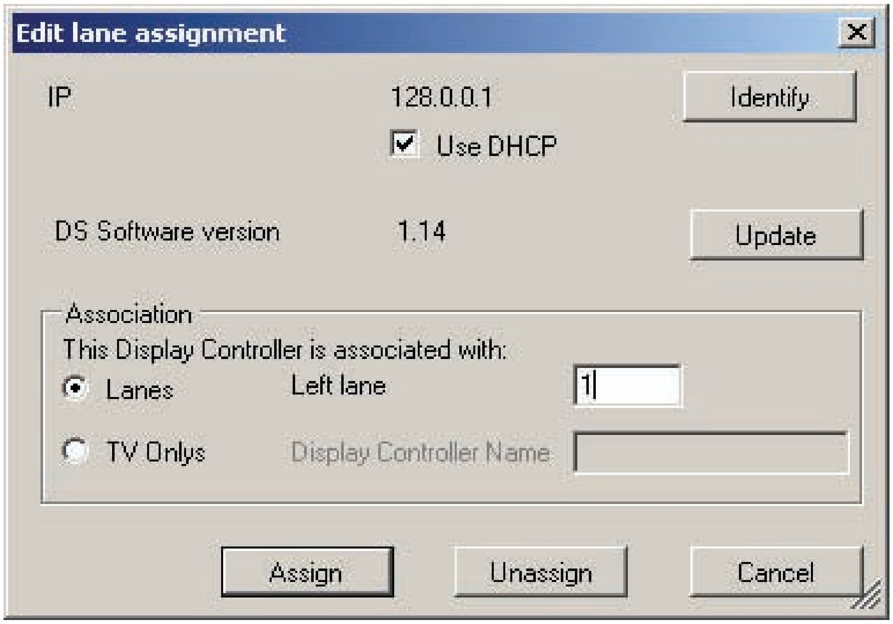

dc-conf
File
Help
Network scan
Update software

IP	Version	Left lane	Right lane	TV Only
128.0.0.1	1.13	1	2	
128.0.0.3	1.14	3	4	
128.0.0.4	1.14	5	6	
128.0.0.5	1.14	9	10	
128.0.0.6	1.14	7	8	

Ready

dc-config network scan complete

4. Double-click on the desired Display Controller from the items listed.



Edit lane assignment

IP 128.0.0.1

☑ Use DHCP

DS Software version 1.14

Association

This Display Controller is associated with:

● Lanes Left lane 1

○ TV Onlys Display Controller Name

dc-config Lane Assignment

5. Use the *Identify* button to verify what lane(s) the display controller is connected to. Clicking *Identify* will cause the overhead(s) connected to the controller to alternately flash red, green, and blue. Click the *Identify* button again to stop the flashing.

6. In the *Association* section, select the appropriate overhead type association for the Display Controller - Lanes (scoresheet monitor) or TV Onlys.

   For Display Controller selected as “Lanes”, enter the left lane number of the lane pair identified in step 5.

   For Display Controller selected as a “TV Only”, enter a user-friendly name for the Display Controller.

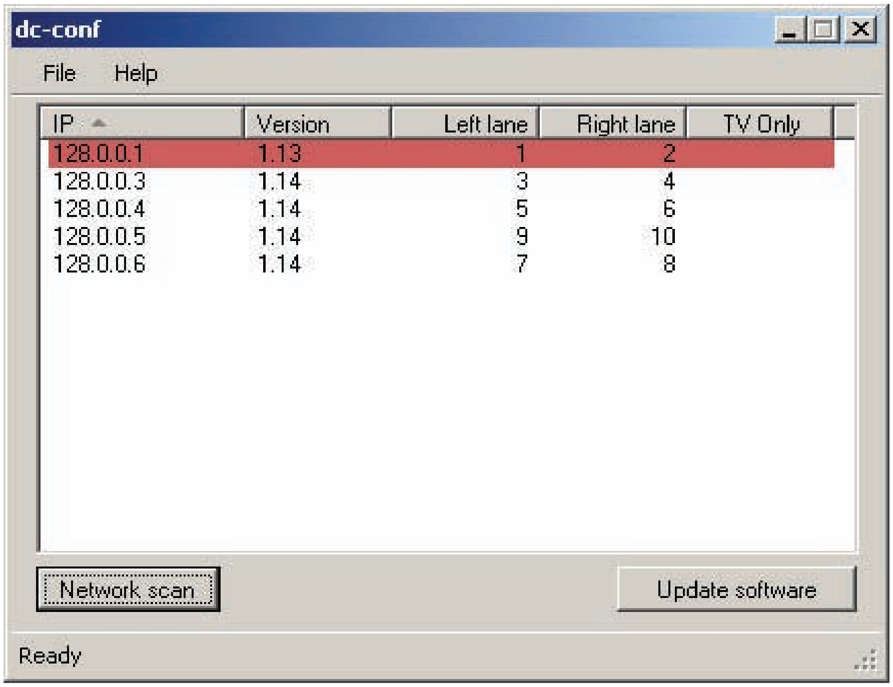
7. Click *Assign* to apply the setting to the Display Controller

8. After applying new settings to the Display Controller, reboot the associated Scorer Computer.

HINT: *To save time, it is suggested to make changes to all Display Controllers as needed, then reboot all scorers.*

Updating Software

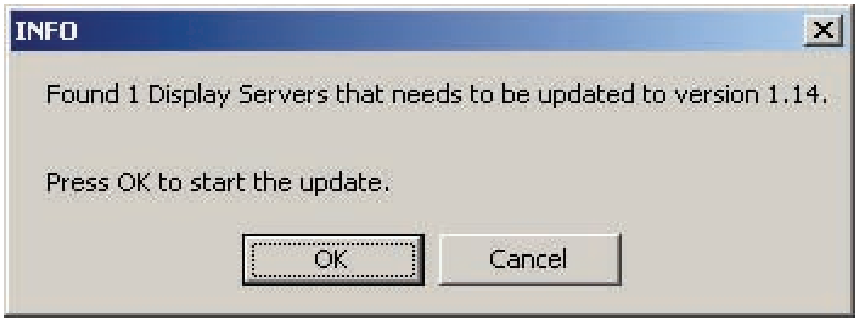
On occasion, when a new version of Vector Scorer is released, a new version of the Display Controller software will be released along with it. When this happens, it will be necessary to the Display Controllers in order to communicate with the properly with the scoring software. After performing a network scan in the dc-config program any Display Controller that has an out-of-date software version, it will be a red color in the list.



IP	Version	Left lane	Right lane	TV Only
128.0.0.1	1.13	1	2	
128.0.0.3	1.14	3	4	
128.0.0.4	1.14	5	6	
128.0.0.5	1.14	9	10	
128.0.0.6	1.14	7	8	

dc-config network scan complete

2. To update all out-of-date DCs, click “Update software”. You will be asked to confirm the update. Select *OK*.

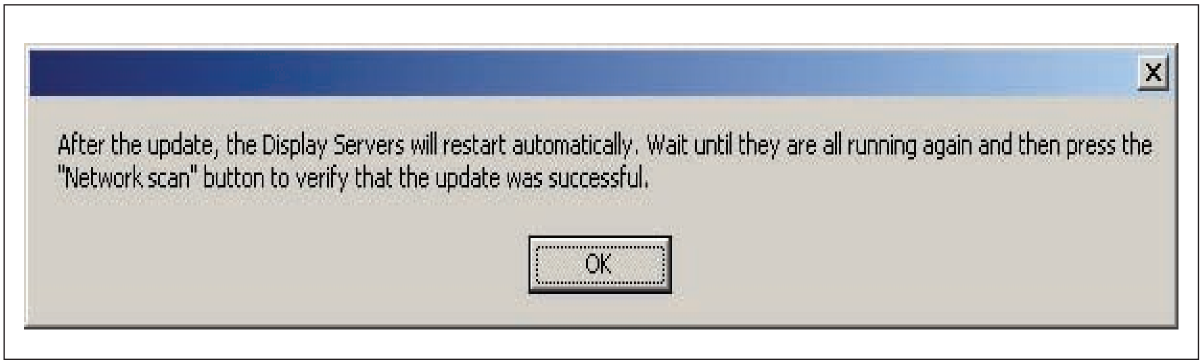


Found 1 Display Servers that needs to be updated to version 1.14.

Press OK to start the update.

dc-config Software Update Confirmation

3. A message will appear when all DCs have been updated. Select *OK*.



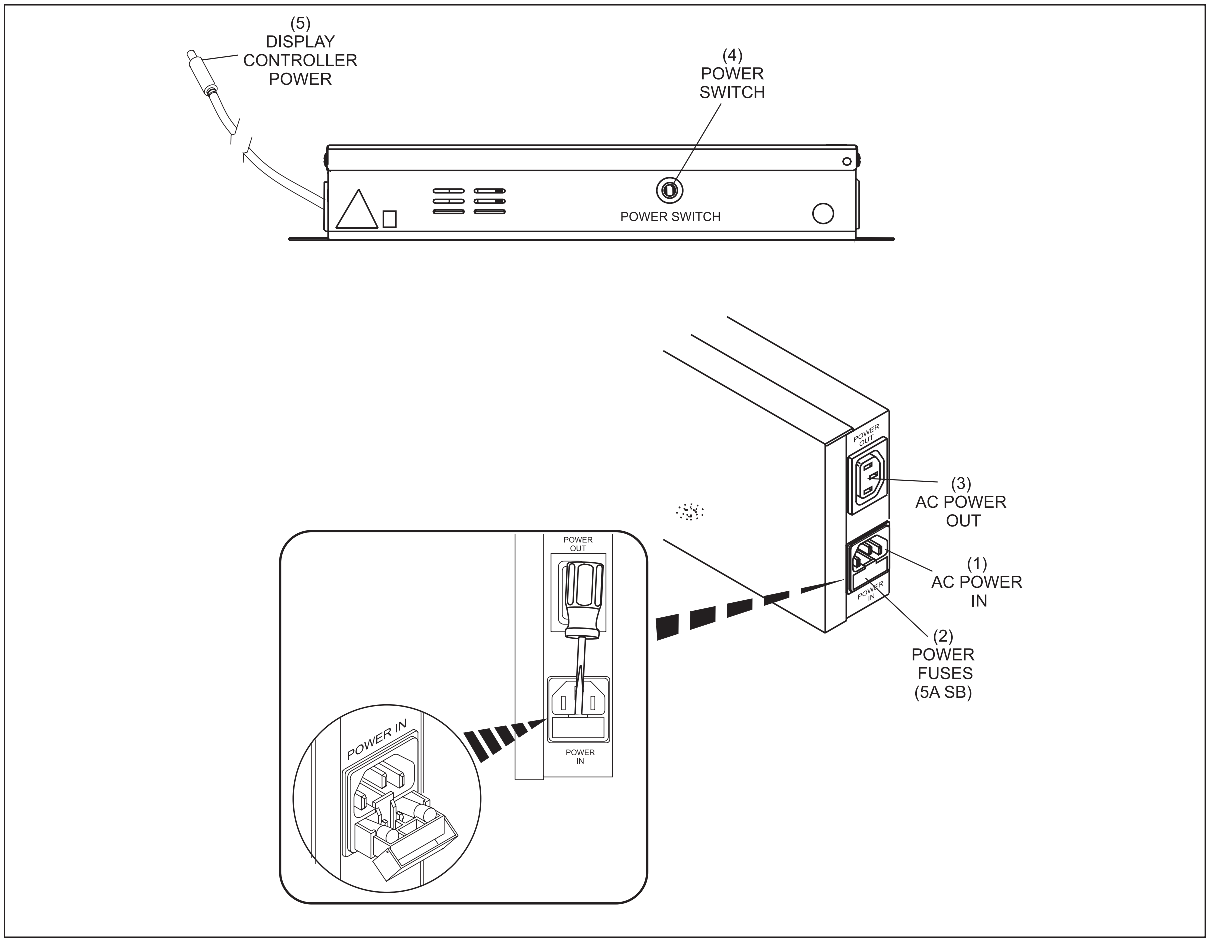
After the update, the Display Servers will restart automatically. Wait until they are all running again and then press the "Network scan" button to verify that the update was successful.

dc-config Software Update Confirmation

4. After the Display Controllers have rebooted, run network scan again to verify the update succeeded.

NOTE: *It is NOT necessary to reboot the scorer after the update.*

POWER SUPPLY


(5)
DISPLAY
CONTROLLER
POWER
(4)
POWER
SWITCH
POWER SWITCH
POWER OUT
(3)
AC POWER
OUT
(1)
AC POWER
IN
POWER IN
(2)
POWER
FUSES
(5A SB)
POWER IN

Display Controller Power Supply

(1) AC POWER IN	(2) POWER FUSE (5A SB)	(3) AC POWER OUT
(4) POWER SWITCH	(5) DISPLAY CONTROLLER POWER	

(1) AC Power In - AC power input.

(2) Power Fuses - 5 amp, slo-blow fuses used for the incoming power.

(3) AC Power Out - AC power connection that can be used to power a monitor.

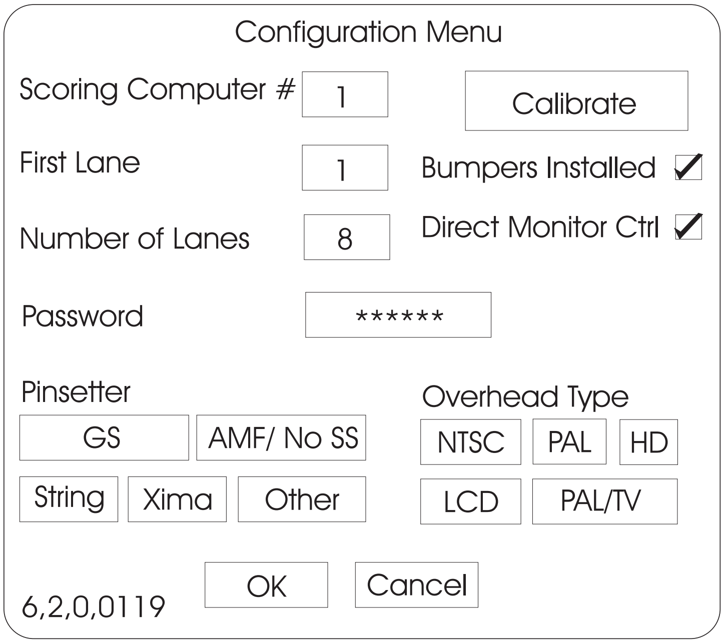
(4) Power Switch - Push button used to power the unit On/Off.

(5) Display Controller Power - 12V DC power output for the Display Controller

CONFIGURING SAMSUNG OVERHEAD MONITORS

The Samsung overhead monitors are directly connected and controlled from the Display Controller through a serial port. For the monitors to function properly they must be configured as follows:

1. At the scorer "configuration menu," configure the scoring computer select HD as the overhead type. The "Direct Monitor Ctrl" checkbox will automatically be selected (checked) and grayed out. Refer to figure titled *Configuration Menu.*



Configuration Menu

Scoring Computer # 1

Calibrate

First Lane 1

Bumpers Installed ☑

Number of Lanes 8

Direct Monitor Ctrl ☑

Password ******

Pinsetter

GS | AMF/ No SS | String | Xima | Other

Overhead Type

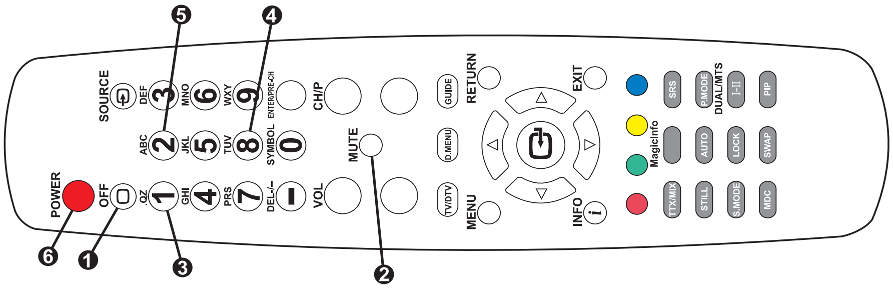
NTSC | PAL | HD | LCD | PAL/TV

6,2,0,0119

OK | Cancel

Configuration Menu

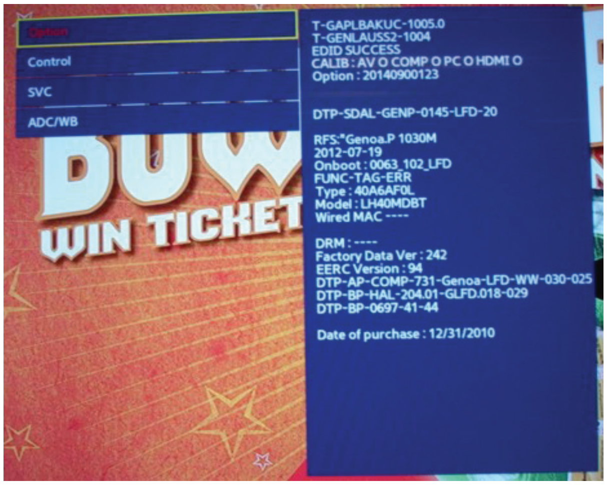
2. At the monitor being set up, press the following buttons in sequence on the Samsung remote control, to reset the monitor and enable the on-screen display: "OFF", "Mute", "1", "8", "2" , "Power". Refer to figure titled *Typical Samsung Remote Control.*


❺
❹
❻
❶
❸
❷
POWER
OFF
SOURCE
MUTE
CH/P
VOL
GUIDE
D.MENU
TV/DTV
RETURN
MENU
EXIT
INFO
MagicInfo
SRS
P.MODE
DUAL/MTS
PIP
AUTO
LOCK
SWAP
TTX/MIX
STILL
S.MODE
MDC

❶ Press the **"OFF"** button on the remote
❷ Press the **"MUTE"** button on the remote
❸ Press the **"1"** button on the remote
❹ Press the **"8"** button on the remote
❺ Press the **"2"** button on the remote
❻ Press the **"POWER"** button on the remote
After the monitor turns on, there will be a menu on the screen

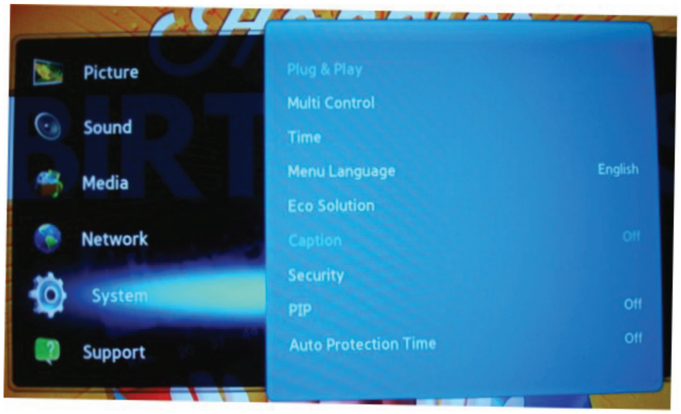
Typical Samsung Remote Control

3. After the monitor turns on, a “Service” menu will appear on the screen. Turn the monitor “off” to exit the “Service” menu.


Option
Control
SVC
ADC/WB
WIN TICKET

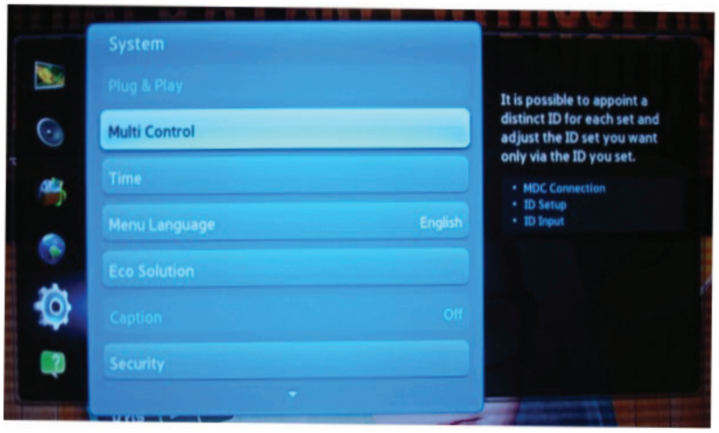
```
T-GAPLBAKUC-1005.0
T-GENLAUSS2-1004
EDID SUCCESS
CALIB : AV O COMP O PC O HDMI O
Option : 20140900123

DTP-SDAL-GENP-0145-LFD-20

RFS:"Genoa.P 1030M
2012-07-19
Onboot : 0063_102_LFD
FUNC-TAG-ERR
Type : 40A6AF0L
Model : LH40MDBT
Wired MAC ----

DRM : ----
Factory Data Ver : 242
EERC Version : 94
DTP-AP-COMP-731-Genoa-LFD-WW-030-025
DTP-BP-HAL-204.01-GLFD.018-029
DTP-BP-0697-41-44

Date of purchase : 12/31/2010
```

4. Turn the monitor “on”, then press the “Menu” button on the remote control to display the “Setup” menu. Use the arrow buttons on the remote to scroll down and select the “System” icon.


Picture
Sound
Media
Network
System
Support
Plug & Play
Multi Control
Time
Eco Solution
Security

Menu Language English
Caption Off
PIP Off
Auto Protection Time Off

5. Use the arrow buttons on the remote to select “Multi Control”.


System
Plug & Play
Multi Control
Time
Eco Solution
Security

Menu Language English
Caption Off

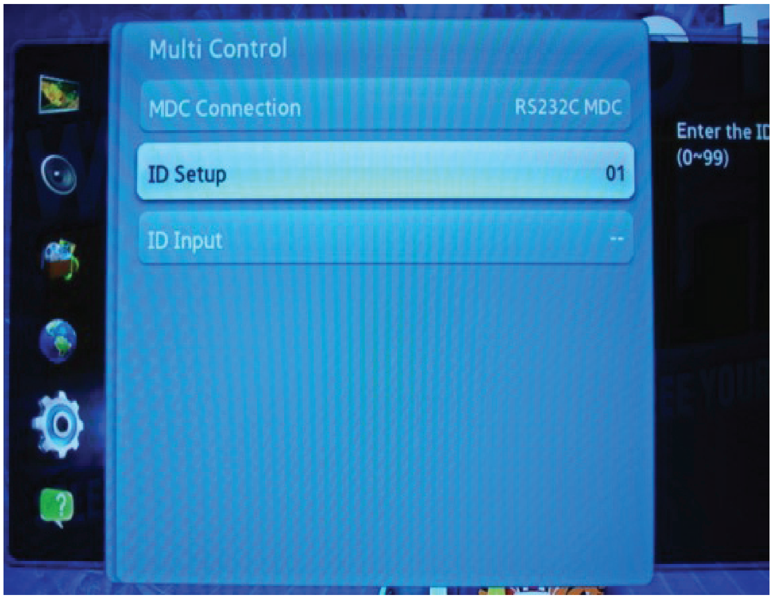
It is possible to appoint a distinct ID for each set and adjust the ID set you want only via the ID you set.

- MDC Connection
- ID Setup
- ID Input

6. Make sure the MDC Connection type is set to RS232CMDC, then set the ID Setup of the monitor as follows:

   Scoresheet monitors - Set the ID Setup to the lane number where the monitor is located. The example shown below is configured for lane 1.

   TV-Only monitors - Set the ID for TV-only monitors sequentially starting with the next number after the total number of lanes (scoresheet monitors) in the center. For example if the number of lanes in the center is 16, the first TV-Only monitor will be have the ID setup of 17. The next TV-Only monitor will have the ID of 18, etc..



MDC Connection RS232C MDC

ID Setup 01

ID Input --

7. Press “Exit” on the remote control to exit the “Setup” menu.

MAINTENANCE OF WIDE SCREEN OVERHEADS

Although the monitors require very little maintenance, it is suggested that you follow the screen manufacturer’s recommendations to keep them running at optimum performance. As each manufacturer has their own maintenance requirements, it is impossible to give specific recommendations for monitors supplied by a bowling center. Always check with the manufacturer of your monitor before using any cleaning solution or glass cleaner.

In general, it is important to make sure that any vent holes are clear of obstructions and the monitors are adjusted and cleaned for optimum readability.

General Cleaning

Exercise care when cleaning as the panel and exterior of advanced LCDs are easily scratched.
Take the following steps when cleaning.

1. Turn the monitor power off.
2. Disconnect the power cord from the product. Hold the power cable by the plug and do not touch the cable with wet hands. Otherwise, an electric shock may result.
3. Wipe the product with a clean, soft and dry cloth.
    - Do not use detergents that contain alcohol, solvent or surface-active agents.
    - Do not spray water or detergent directly on the product.
4. Wet a soft and dry cloth in water and wring thoroughly to clean the exterior of the product.
5. Connect the power cord to the monitor when cleaning is finished.
6. Power on the monitor.

.

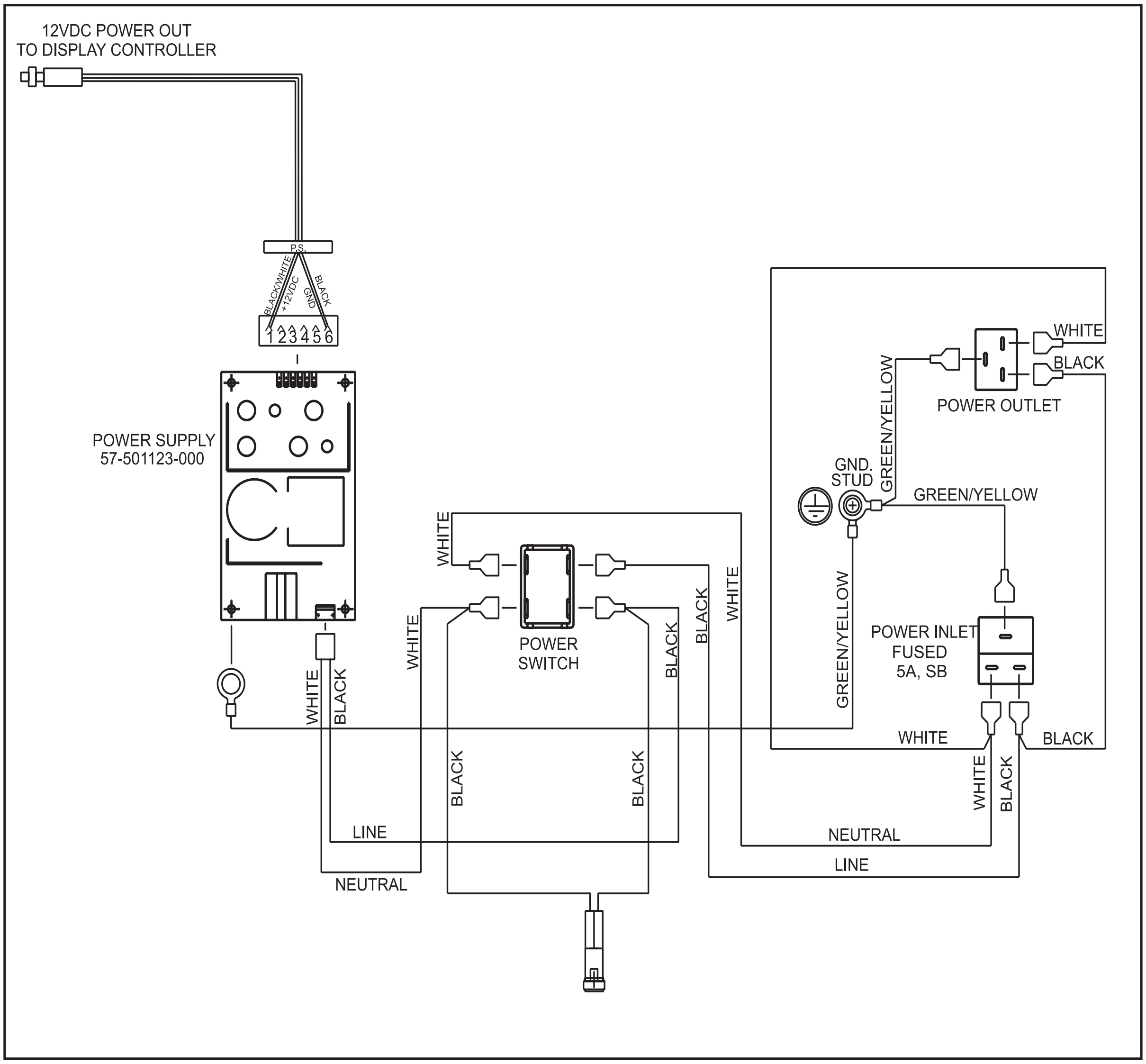
Vent Holes

Keep the vent holes on the back of the screen clean of dirt and dust. It is recommended to wipe holes with a soft cloth a minimum of once per year. If using the internal cooling fan continuously, it’s recommended to wipe vent holes a minimum of once a month.

Adjustments

Adjust the monitor’s brightness, contrast and sharpness controls to enhance readability. Refer to the monitor vendor manual for specific adjustment procedures.

CABLE DIAGRAMS


12VDC POWER OUT
TO DISPLAY CONTROLLER
P.S.
BLACK/WHITE
+12VDC
GND
BLACK
1 2 3 4 5 6
POWER SUPPLY
57-501123-000
WHITE
BLACK
WHITE
WHITE
BLACK
BLACK
WHITE
POWER
SWITCH
BLACK
BLACK
LINE
NEUTRAL
NEUTRAL
LINE
GND.
STUD
GREEN/YELLOW
GREEN/YELLOW
GREEN/YELLOW
WHITE
BLACK
POWER OUTLET
POWER INLET
FUSED
5A, SB
WHITE
BLACK
WHITE
BLACK

Display Controller Power Supply - Wiring

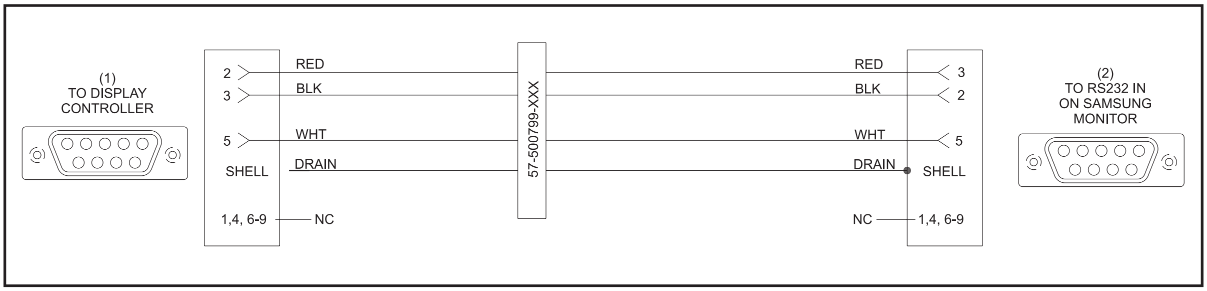
(1) 57-500454-000 COMPOSITE VIDEO

(2) 57-500700-000

(3)57-500469-000 POWER

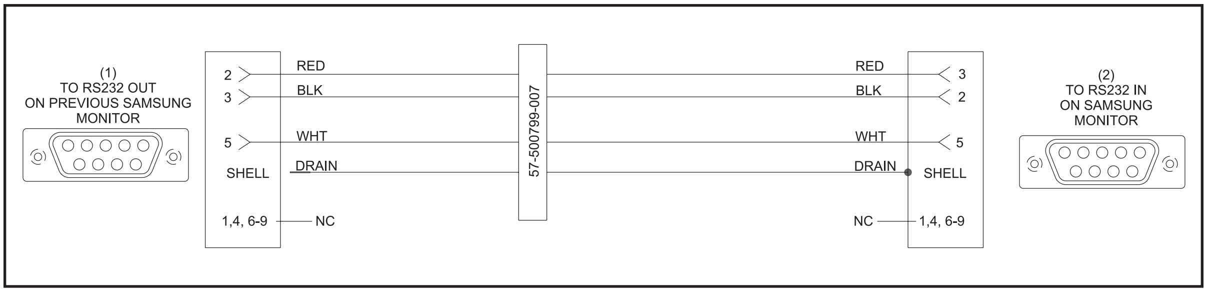
(4) 11-686557-000 POWER OUTLET

(5) 11-686559-000 POWER INLET


(1)
TO DISPLAY
CONTROLLER
2
3
5
SHELL
1,4, 6-9
RED
BLK
WHT
DRAIN
NC
57-500799-XXX
RED
BLK
WHT
DRAIN
NC
3
2
5
SHELL
1,4, 6-9
(2)
TO RS232 IN
ON SAMSUNG
MONITOR

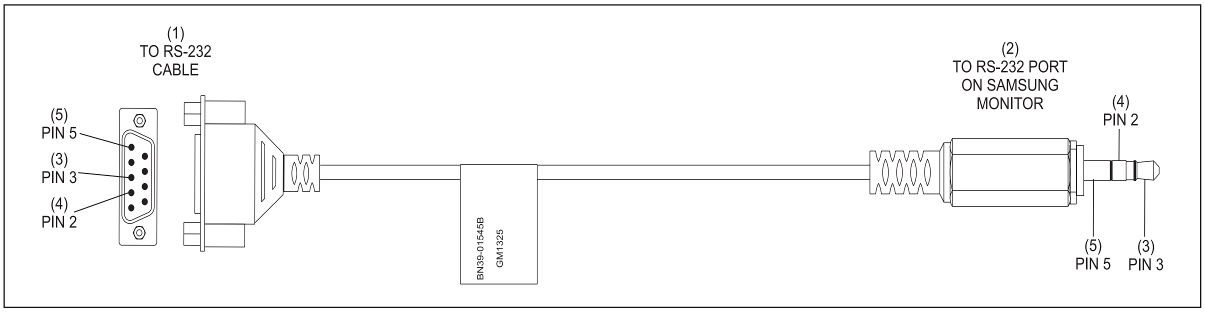
RS-232 Monitor Control Cable (57-500799-003)

(1) TO DISPLAY CONTROLLER (2) TO RS232 IN ON SAMSUNG MONITOR


(1)
TO RS232 OUT
ON PREVIOUS SAMSUNG
MONITOR
2
3
5
SHELL
1,4, 6-9
RED
BLK
WHT
DRAIN
NC
57-500799-007
RED
BLK
WHT
DRAIN
NC
3
2
5
SHELL
1,4, 6-9
(2)
TO RS232 IN
ON SAMSUNG
MONITOR

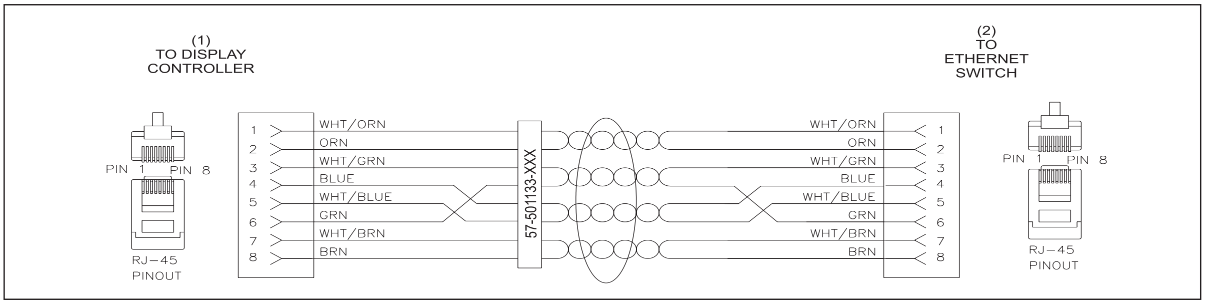
RS-232 Monitor Control Cable - Daisy Chain (57-500799-007) (57-500799-009)

(1) TO RS232 OUT ON PREVIOUS SAMSUNG MONITOR (2) TO RS232 IN ON SAMSUNG MONITOR


(1)
TO RS-232
CABLE
(5)
PIN 5
(3)
PIN 3
(4)
PIN 2
BN39-01545B
GM1325
(2)
TO RS-232 PORT
ON SAMSUNG
MONITOR
(4)
PIN 2
(5)
PIN 5
(3)
PIN 3

Samsung RS-232 Serial Adapter (Required for Some Models of Samsung Monitors

(1) TO RS-232 CABLE (2) TO RS-232 PORT ON SAMSUNG MONITOR (3) PIN 3
(4) PIN 2 (5) PIN 5


(1)
TO DISPLAY
CONTROLLER
PIN 1
PIN 8
RJ-45
PINOUT
1
2
3
4
5
6
7
8
WHT/ORN
ORN
WHT/GRN
BLUE
WHT/BLUE
GRN
WHT/BRN
BRN
57-501133-XXX
WHT/ORN
ORN
WHT/GRN
BLUE
WHT/BLUE
GRN
WHT/BRN
BRN
1
2
3
4
5
6
7
8
(2)
TO
ETHERNET
SWITCH
PIN 1
PIN 8
RJ-45
PINOUT

CAT5e (Ethernet Cable) (Part No. 57-501133-XXX)

(1) TO DISPLAY CONTROLLER (2) TO ETHERNET SWITCH

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    Updating Scoring Computer Software 63
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        Updating Exciter Graphics and Sounds....64
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GLOSSARY OF TERMS

The following terms are used in this manual. To better understand the information presented in the manual you should familiarize yourself with these terms.

Cat5 - Twisted pair cabling used in an Ethernet network. This cable type connects to the Scorer Computer(s), Control desk computer(s) and Display Controllers to allowing them to communicate.

Distribution PCB - A circuit board located behind the pin camera on each lane pair that handles the camera power, machine on/off, machine reset, foul signals, and ball detector signals.

Ethernet - A protocol that specifies how computers send information to one another.

Ethernet Switch - Device that is the central point of connection for the scorer computer(s) and Control desk computer(s) in the Ethernet network. The Switch allows data to be sent/received at full transmission speeds. Also refer to Cat5.

Hard Drive - A computer's primary storage device. The hard drive contains the programs and files that make the computer function.

LCD Interface - A optional circuit board in the Scorer Computer that adapts the scoresheet video so that it can be displayed on the lower flatscreen displays

Motherboard - A circuit board inside a Scorer Computer or Control Desk Computer that contains the microprocessors and memory. The hard drives and most of the other PCBs in the computer connect to this board. (Also referred to as the System Board).

PCI Bus - Peripheral Component Interface Bus - The medium sized, white colored slot connectors on a motherboard. The Video3 PCBs connect to the scorer computer motherboard through these slots.

Power Supply - An assembly located inside a computer that provides power to the components inside the computer.

Primary Patch Panel - A circuit board located at the inside bottom of the Scorer Computer. It provides the connections and surge protection for the Keypad or Touchscreen and Distribution PCB, GS Pinsetter. and pinball wizard bumper systems. Overhead video connectors on the board are used for in the Vector SD system. The primary patch panel has connections for up to 8 lanes.

Video3 PCB - A multifunctional circuit board located in a Scorer Computer. This board processes scorer video for the overhead monitors, processes the video received from the pin cameras, and provides communication for the pinsetters (Distribution PCB), and communication and audio control for the scoring consoles

If LCD touchscreens are installed a second Video3 PCB is installed to process the video the lower screens.

Scorer Computer - Computer(s) located at the curtain wall that control the scoring functions for a up to 8 lanes.

Secondary Patch Panel - An optional circuit board mounted on the inside side wall of the Scorer Computer that provides connections and surge protection for the lower LCD video. The Secondary Patch Panel has connections for 8 lanes.

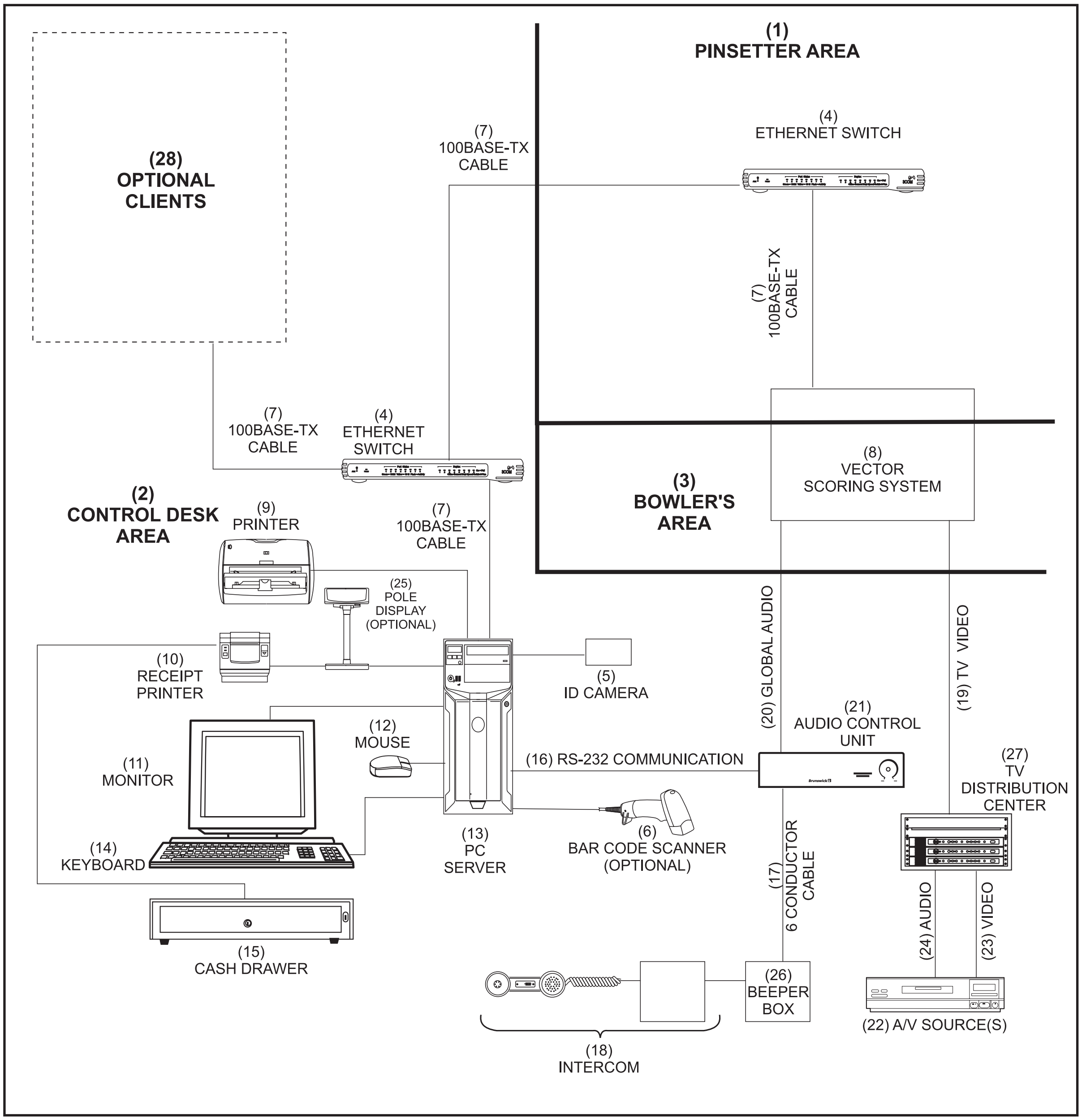
VECTOR NETWORK SYSTEM OVERVIEW

The control desk is available in two configurations; Vector and Vector Plus. The Vector Control system includes a high speed computer, complete with a keyboard, mouse, display monitor and printer. The computer provides the bowling center the ability to control bowling activity from a remote location, keep track of the financial transactions, and manage league and tournaments. Additional optional computers can be connected to the system as needed.

The cash drawer, receipt printer and pole display connected to the computer provide point of sale (POS) capability. Reference the figure titled *Vector Control Desk*.

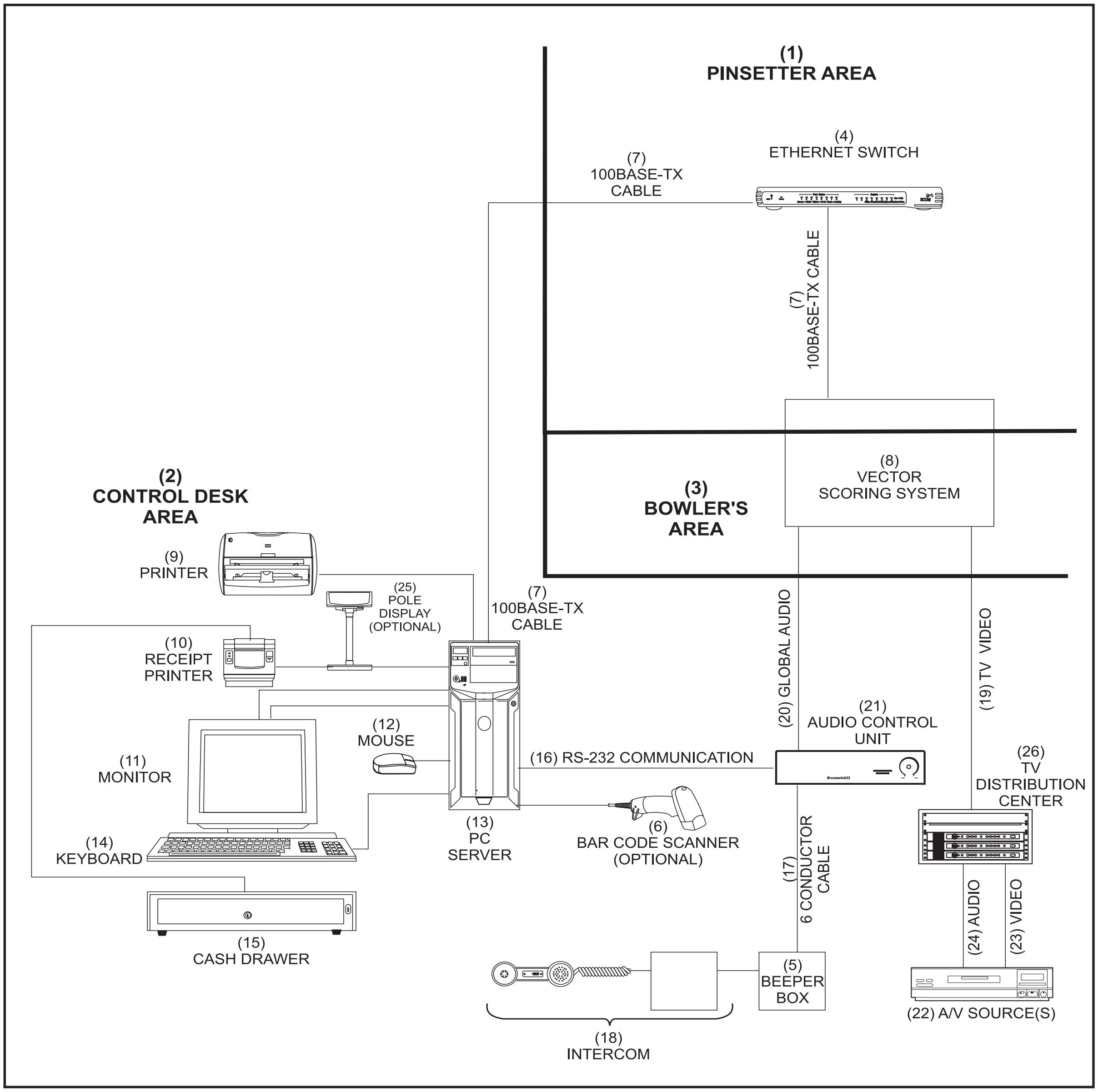
Like the Vector system, Vector Plus consists of one or more computers and POS assemblies located at the control desk, and in some cases, a computer in the office. The Vector Plus also provides the bowling center personnel convenient control of the scoring system while keeping track of the financial transactions and bowling activity in the center. In addition it allows the center additional security control for the system as well as an advance tracking of activity.

Refer to figures titled *Vector Control Desk, Vector Plus Configuration 1, Vector Plus Configuration 2, Vector Plus Configuration 3,* and *Vector Plus*


(1)
PINSETTER AREA
(4)
ETHERNET SWITCH
(7)
100BASE-TX
CABLE
(28)
OPTIONAL
CLIENTS
(7)
100BASE-TX
CABLE
(7)
100BASE-TX
CABLE
(4)
ETHERNET
SWITCH
(8)
VECTOR
SCORING SYSTEM
(3)
BOWLER'S
AREA
(2)
CONTROL DESK
AREA
(9)
PRINTER
(7)
100BASE-TX
CABLE
(25)
POLE
DISPLAY
(OPTIONAL)
(10)
RECEIPT
PRINTER
(5)
ID CAMERA
(20) GLOBAL AUDIO
(19) TV VIDEO
(21)
AUDIO CONTROL
UNIT
(12)
MOUSE
(11)
MONITOR
(16) RS-232 COMMUNICATION
(27)
TV
DISTRIBUTION
CENTER
(14)
KEYBOARD
(13)
PC
SERVER
(6)
BAR CODE SCANNER
(OPTIONAL)
(17)
6 CONDUCTOR
CABLE
(24) AUDIO
(23) VIDEO
(15)
CASH DRAWER
(26)
BEEPER
BOX
(22) A/V SOURCE(S)
(18)
INTERCOM

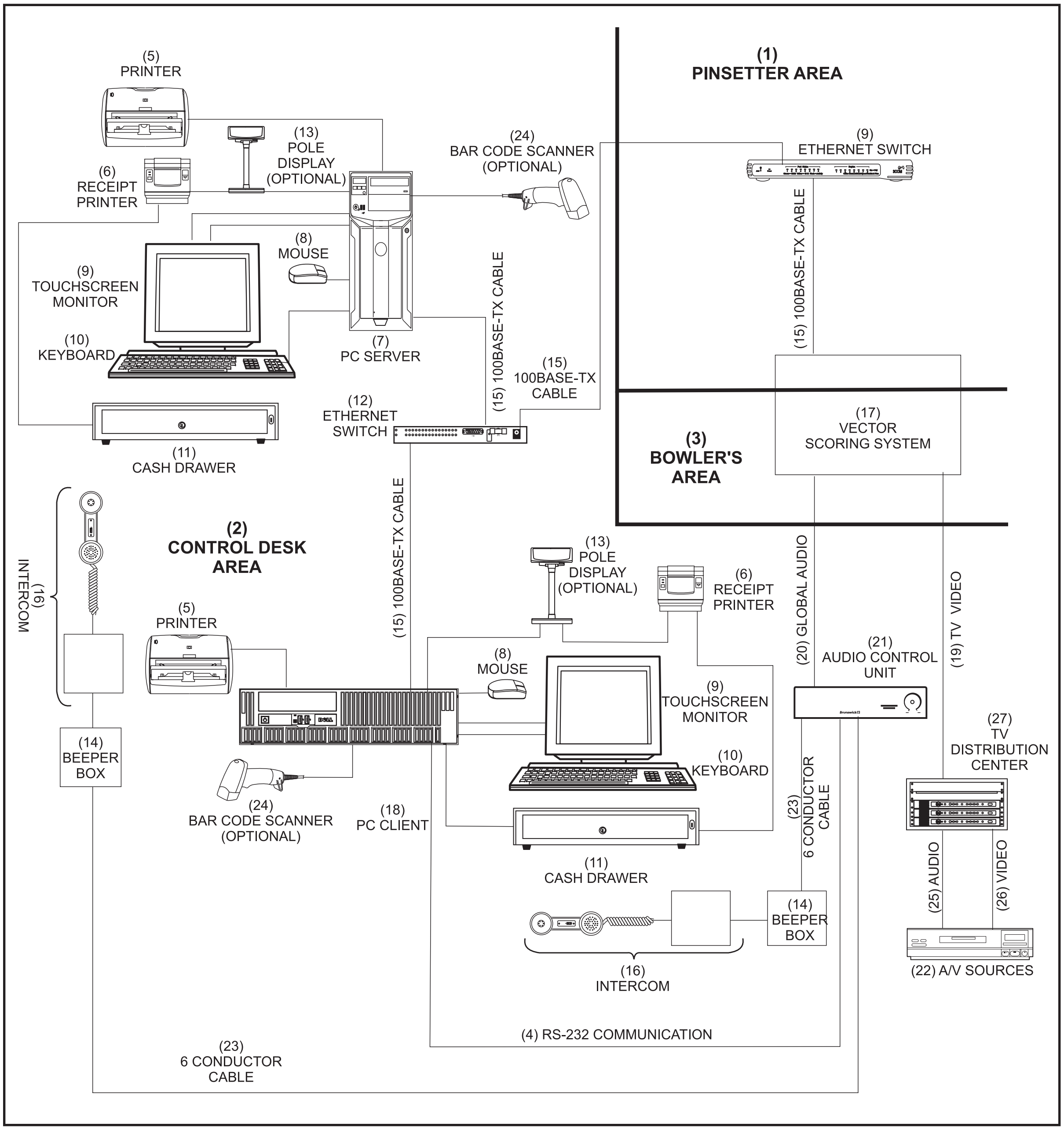
Vector Control Desk

(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER'S AREA
(4) ETHERNET SWITCH
(5) BEEPER BOX
(6) BAR CODE READER OPTIONAL
(7) 100 BASE-TX CABLE
(8) VECTOR SCORING SYSTEM
(9) PRINTER
(10) RECEIPT PRINTER
(11) TOUCHSCREEN MONITOR
(12) MOUSE
(13) PC SERVER
(14) KEYBOARD
(15) CASH DRAWER
(16) RS-232 COMMUNICATION
(17) 6 CONDUCTOR CABLE
(18) INTERCOM
(19) TV VIDEO
(20) GLOBAL AUDIO
(21) AUDIO CONTROL UNIT
(22) A/V SOURCE(S)
(23) VIDEO
(24) AUDIO
(25) POLE DISPLAY
(26) TV DISTRIBUTION CENTER


(1)
PINSETTER AREA
(4)
ETHERNET SWITCH
(7)
100BASE-TX
CABLE
(7)
100BASE-TX CABLE
(8)
VECTOR
SCORING SYSTEM
(2)
CONTROL DESK
AREA
(3)
BOWLER'S
AREA
(9)
PRINTER
(25)
POLE
DISPLAY
(OPTIONAL)
(7)
100BASE-TX
CABLE
(10)
RECEIPT
PRINTER
(20) GLOBAL AUDIO
(19) TV VIDEO
(21)
AUDIO CONTROL
UNIT
(12)
MOUSE
(11)
MONITOR
(16) RS-232 COMMUNICATION
(26)
TV
DISTRIBUTION
CENTER
(14)
KEYBOARD
(13)
PC
SERVER
(6)
BAR CODE SCANNER
(OPTIONAL)
(17)
6 CONDUCTOR
CABLE
(24) AUDIO
(23) VIDEO
(15)
CASH DRAWER
(5)
BEEPER
BOX
(22) A/V SOURCE(S)
(18)
INTERCOM

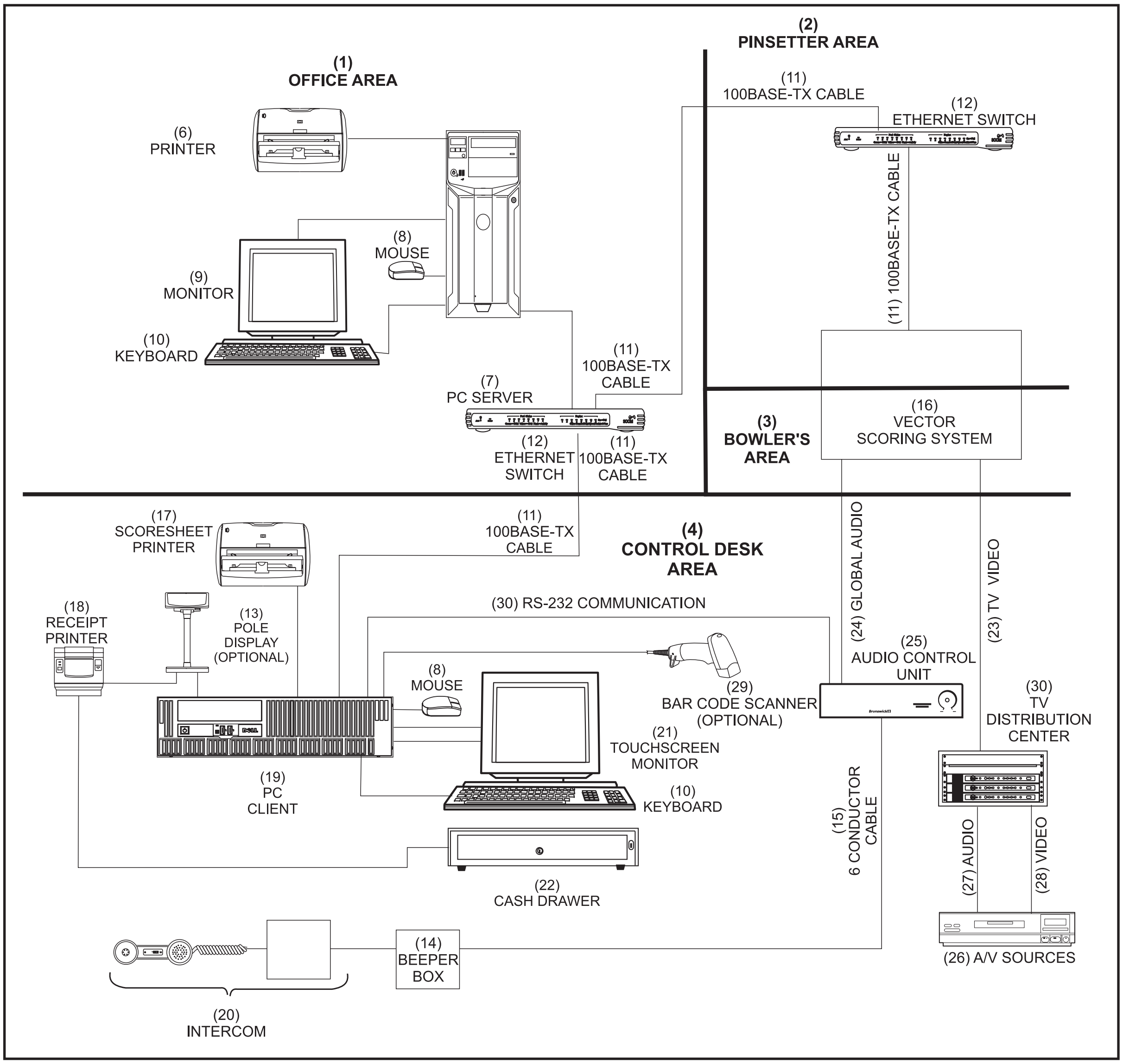
Vector Plus Configuration 1

(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER’S AREA
(4) ETHERNET SWITCH
(5) BEEPER BOX
(6) BAR CODE READER OPTIONAL
(7) 100 BASE-TX CABLE
(8) VECTOR SCORING SYSTEM
(9) PRINTER
(10) RECEIPT PRINTER
(11) TOUCHSCREEN MONITOR
(12) MOUSE
(13) PC SERVER
(14) KEYBOARD
(15) CASH DRAWER
(16) RS-232 COMMUNICATION
(17) 6 CONDUCTOR CABLE
(18) INTERCOM
(19) TV VIDEO
(20) GLOBAL AUDIO
(21) AUDIO CONTROL UNIT
(22) A/V SOURCE(S)
(23) VIDEO
(24) AUDIO
(25) POLE DISPLAY
(26) TV DISTRIBUTION CENTER


(1) PINSETTER AREA
(5) PRINTER
(13) POLE DISPLAY (OPTIONAL)
(24) BAR CODE SCANNER (OPTIONAL)
(9) ETHERNET SWITCH
(6) RECEIPT PRINTER
(8) MOUSE
(9) TOUCHSCREEN MONITOR
(15) 100BASE-TX CABLE
(15) 100BASE-TX CABLE
(10) KEYBOARD
(7) PC SERVER
(15) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(17) VECTOR SCORING SYSTEM
(11) CASH DRAWER
(3) BOWLER'S AREA
(15) 100BASE-TX CABLE
(2) CONTROL DESK AREA
(16) INTERCOM
(13) POLE DISPLAY (OPTIONAL)
(6) RECEIPT PRINTER
(20) GLOBAL AUDIO
(19) TV VIDEO
(5) PRINTER
(8) MOUSE
(21) AUDIO CONTROL UNIT
(9) TOUCHSCREEN MONITOR
(27) TV DISTRIBUTION CENTER
(14) BEEPER BOX
(10) KEYBOARD
(23) 6 CONDUCTOR CABLE
(24) BAR CODE SCANNER (OPTIONAL)
(18) PC CLIENT
(11) CASH DRAWER
(25) AUDIO
(26) VIDEO
(14) BEEPER BOX
(16) INTERCOM
(22) A/V SOURCES
(4) RS-232 COMMUNICATION
(23) 6 CONDUCTOR CABLE

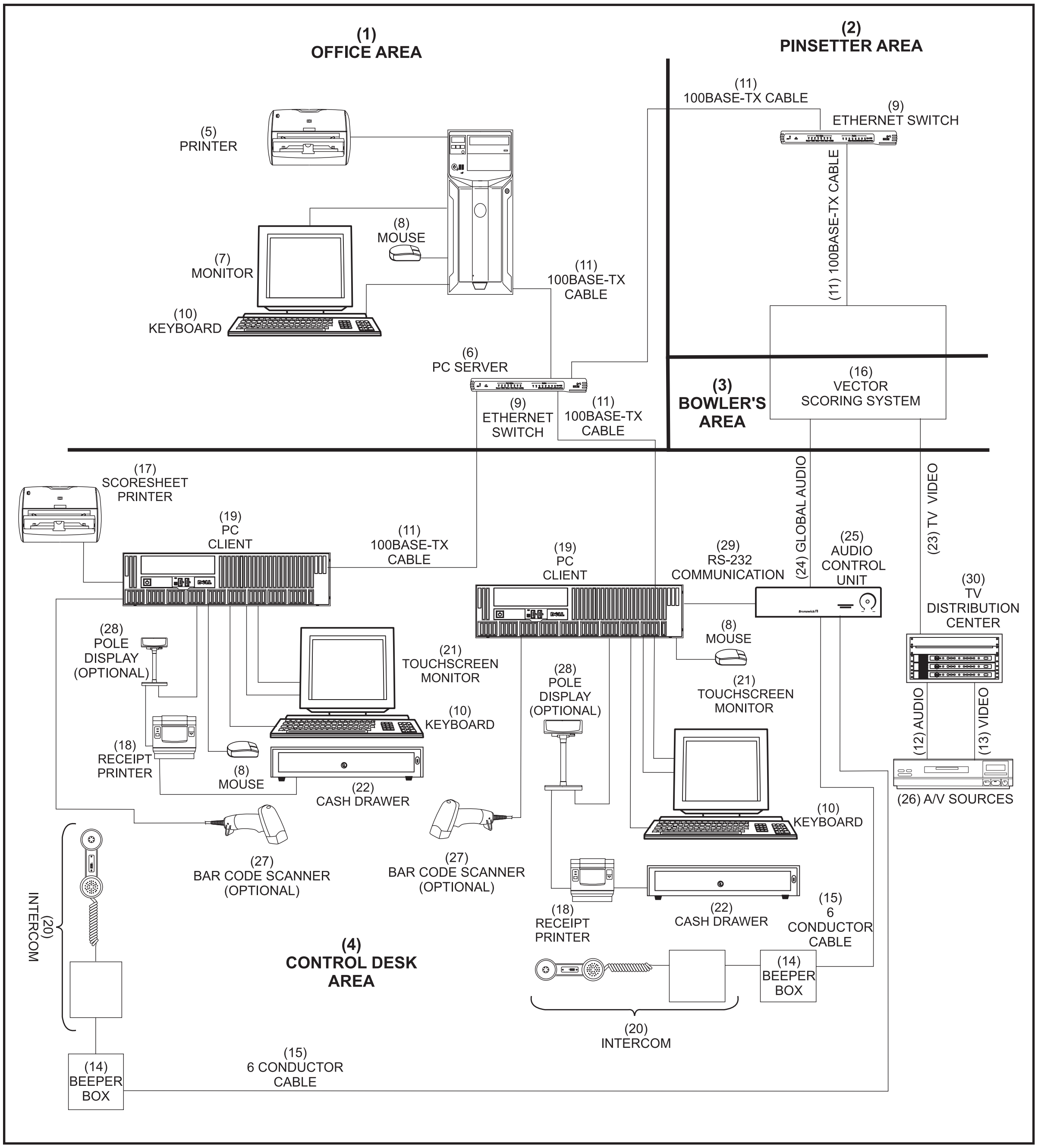
Vector Plus Configuration 2

(1) PINSETTER AREA
(2) CONTROL DESK AREA
(3) BOWLER'S AREA
(4) RS-232 COMMUNICATION
(5) PRINTER
(6) RECEIPT PRINTER
(7) PC SERVER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(11) CASH DRAWER
(12) ETHERNET SWITCH
(13) POLE DISPLAY (OPTIONAL)
(14) BEEPER BOX
(15) 100 BASE-TX CABLE
(16) INTERCOM
(17) VECTOR SCORING SYSTEM
(18) PC CLIENT
(19) TV VIDEO
(20) GLOBAL AUDIO
(21) AUDIO CONTROL UNIT
(22) A/V SOURCE(S)
(23) 6 CONDUCTOR CABLE
(24) BAR CODE READER (OPTIONAL)
(25) AUDIO
(26) VIDEO
(27) TV DISTRIBUTION CENTER


(1) OFFICE AREA
(2) PINSETTER AREA
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(6) PRINTER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(7) PC SERVER
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(11) 100BASE-TX CABLE
(11) 100BASE-TX CABLE
(11) 100BASE-TX CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(13) POLE DISPLAY (OPTIONAL)
(30) RS-232 COMMUNICATION
(24) GLOBAL AUDIO
(23) TV VIDEO
(25) AUDIO CONTROL UNIT
(8) MOUSE
(29) BAR CODE SCANNER (OPTIONAL)
(21) TOUCHSCREEN MONITOR
(30) TV DISTRIBUTION CENTER
(19) PC CLIENT
(10) KEYBOARD
(15) 6 CONDUCTOR CABLE
(27) AUDIO
(28) VIDEO
(22) CASH DRAWER
(14) BEEPER BOX
(26) A/V SOURCES
(20) INTERCOM

Vector Plus Configuration 3

(1) OFFICE AREA
(2) PINSETTER AREA
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(5) RS-232 COMMUNICATION
(6) PRINTER
(7) PC SERVER
(8) MOUSE
(9) MONITOR
(10) KEYBOARD
(11) 100BASE-TX CABLE
(12) ETHERNET SWITCH
(13) POLE DISPLAY (OPTIONAL)
(14) BEEPER BOX
(15) 6 CONDUCTOR CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(19) PC CLIENT
(20) INTERCOM
(21) TOUCHSCREEN MONITOR
(22) CASH DRAWER
(23) TV VIDEO
(24) GLOBAL AUDIO
(25) AUDIO CONTROL UNIT
(26) A/V SOURCES
(27) AUDIO
(28) VIDEO
(29) BAR CODE READER OPTIONAL
(30) TV DISTRIBUTION CENTER


(1)
OFFICE AREA
(2)
PINSETTER AREA
(11)
100BASE-TX CABLE
(9)
ETHERNET SWITCH
(5)
PRINTER
(8)
MOUSE
(7)
MONITOR
(11)
100BASE-TX
CABLE
(11) 100BASE-TX CABLE
(10)
KEYBOARD
(6)
PC SERVER
(16)
VECTOR
SCORING SYSTEM
(3)
BOWLER'S
AREA
(9)
ETHERNET
SWITCH
(11)
100BASE-TX
CABLE
(17)
SCORESHEET
PRINTER
(24) GLOBAL AUDIO
(23) TV VIDEO
(19)
PC
CLIENT
(11)
100BASE-TX
CABLE
(19)
PC
CLIENT
(29)
RS-232
COMMUNICATION
(25)
AUDIO
CONTROL
UNIT
(30)
TV
DISTRIBUTION
CENTER
(28)
POLE
DISPLAY
(OPTIONAL)
(21)
TOUCHSCREEN
MONITOR
(8)
MOUSE
(28)
POLE
DISPLAY
(OPTIONAL)
(21)
TOUCHSCREEN
MONITOR
(10)
KEYBOARD
(12) AUDIO
(13) VIDEO
(18)
RECEIPT
PRINTER
(8)
MOUSE
(22)
CASH DRAWER
(26) A/V SOURCES
(10)
KEYBOARD
(27)
BAR CODE SCANNER
(OPTIONAL)
(27)
BAR CODE SCANNER
(OPTIONAL)
(20)
INTERCOM
(15)
6
CONDUCTOR
CABLE
(18)
RECEIPT
PRINTER
(22)
CASH DRAWER
(4)
CONTROL DESK
AREA
(14)
BEEPER
BOX
(20)
INTERCOM
(15)
6 CONDUCTOR
CABLE
(14)
BEEPER
BOX

Vector Plus Configuration 4

(1) OFFICE AREA
(2) PINSETTER AREA
(3) BOWLER'S AREA
(4) CONTROL DESK AREA
(5) PRINTER
(6) PC SERVER
(7) MONITOR
(8) MOUSE
(9) ETHERNET SWITCH
(10) KEYBOARD
(11) 100BASE-TX CABLE
(12) AUDIO
(13) VIDEO
(14) BEEPER BOX
(15) 6 CONDUCTOR CABLE
(16) VECTOR SCORING SYSTEM
(17) SCORESHEET PRINTER
(18) RECEIPT PRINTER
(19) PC CLIENT
(20) INTERCOM
(21) TOUCHSCREEN MONITOR
(22) CASH DRAWER
(23) TV VIDEO
(24) GLOBAL AUDIO
(25) AUDIO CONTROL UNIT (OPTIONAL)
(26) A/V SOURCES
(27) BAR CODE READER
(28) POLE DISPLAY (OPTIONAL)
(29) RS-232 COMMUNICATION
(30) TV DISTRIBUTION CENTER

VECTOR COMPUTERS

Both the Vector and Vector Plus Systems use Dell computers for the server and client computers. The specific Dell model and the Windows operating system installed on the computer depends on when the computer was installed and whether it is used as the server or client computer. Currently the server computer has the Windows 2003 server operating system installed while the clients operate on the Windows XP operating system. Additional information for your specific Dell computer can be found at their website www.Dell.com.

WARNING! Each computer is designed for universal input voltage which means it can operate with an input of 115 VAC or 230 VAC.

Although operating voltage is normally set when the computer is installed, it may be necessary to configure it when replacing the computer. To select the voltage, simply slide the selector switch located on the back of the computer near the power input receptacle, so the desired voltage can be read on the selector. Refer to the figure titled *Rear Panel Connectors and Voltage Switch* shown later in this section.

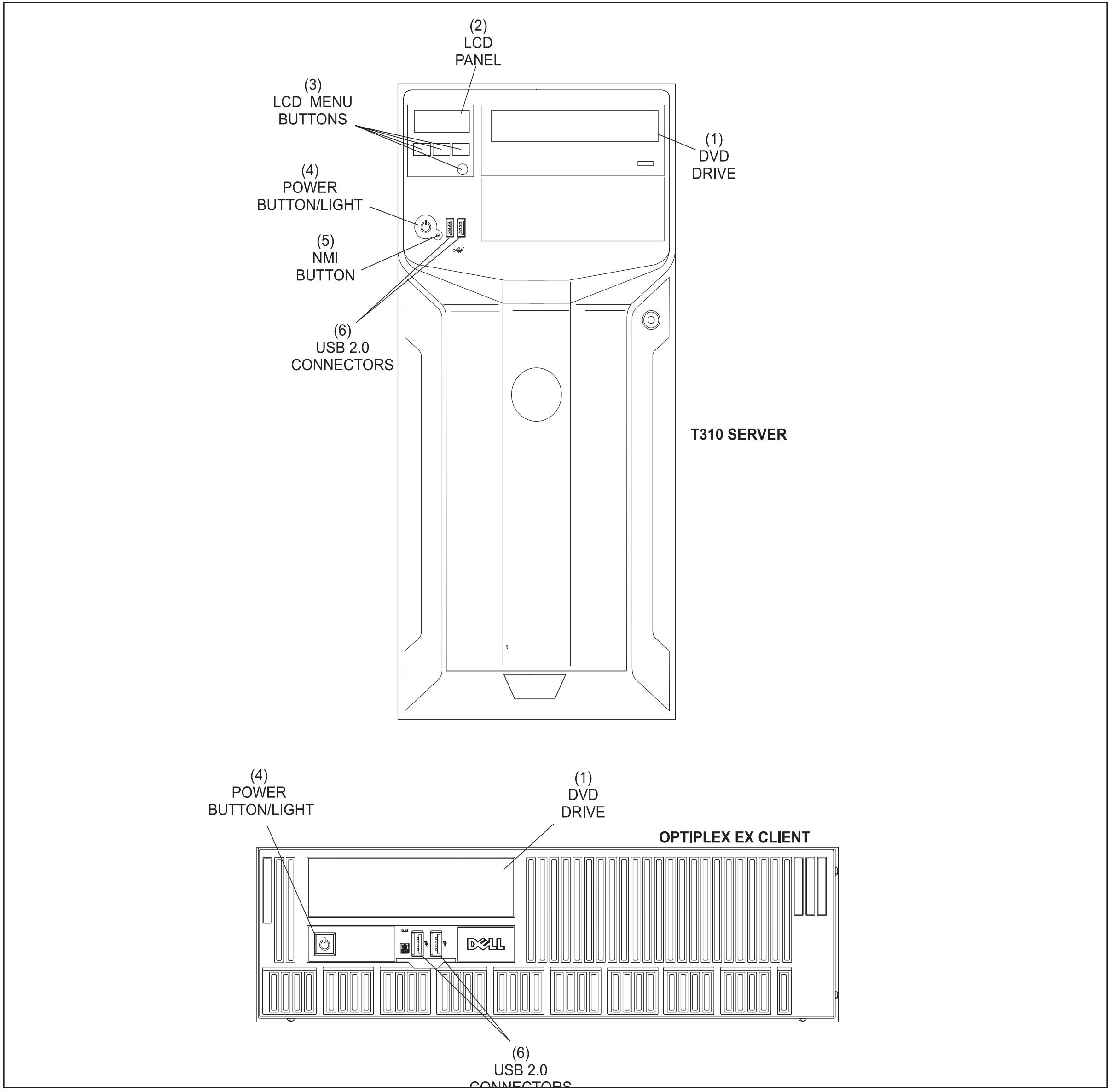
The location of the computer depends on the bowling center's needs. (All installations will have at least one computer located at the control desk.) For Vector systems the server computer is normally located at the control desk. For Vector Plus systems it may be located in an office or at the control desk.

The operating procedures and optional programs loaded onto the computers differ between the Vector and Vector Plus systems. Refer to your Vector system user guide for specific operating information.

Connections

Despite the different models used for the server and client computers, they all contain standard connections for power, keyboard, mice, display monitor, printer, external devices, and network communication. The front of the computer contains typical controls and indicators found on most computers. Refer to figures titled *Front Panel Connectors and Controls* and *Rear Panel Connectors.*

Front Panel Connectors and Controls


(2) LCD PANEL
(3) LCD MENU BUTTONS
(1) DVD DRIVE
(4) POWER BUTTON/LIGHT
(5) NMI BUTTON
(6) USB 2.0 CONNECTORS
T310 SERVER
(4) POWER BUTTON/LIGHT
(1) DVD DRIVE
OPTIPLEX EX CLIENT
(6) USB 2.0 CONNECTORS

Typical Front Panel Connectors and Controls

Functions of the connectors and controls on the front of the computer may include:

(1) DVD Drive - Drive used to load programs from DVD disks or in some cases create backups on DVDs.

(2) LCD Panel - Located on the T310 server, this display provides system ID, status information, and system error messages.

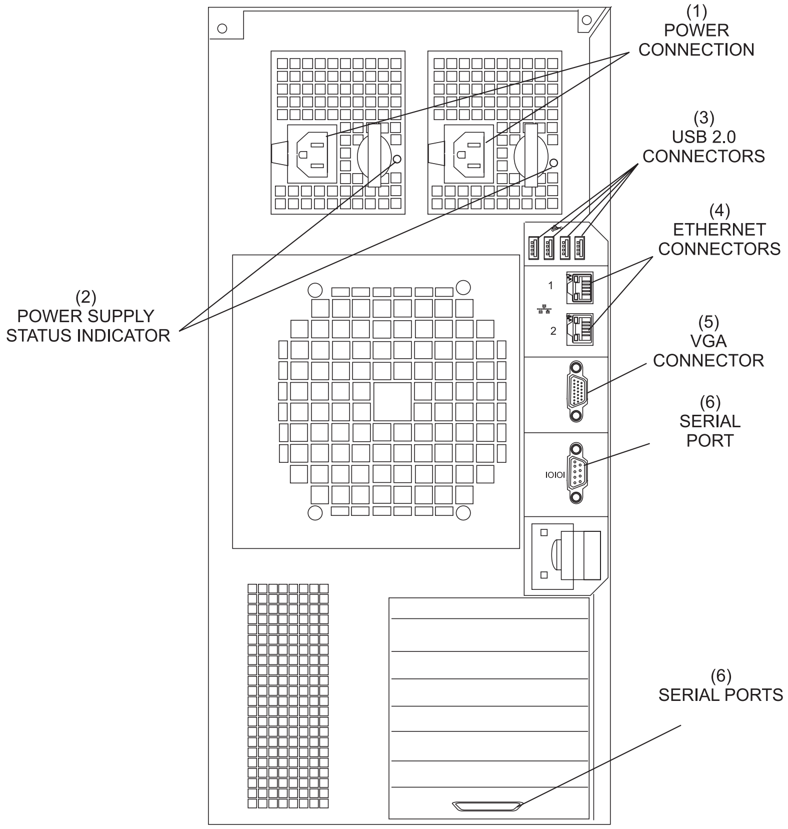
(3) **LCD Menu Buttons -** Buttons used to navigate the control panel LCD menu on the T310 server. The System Identification button turns the system ID mode for the T310 server "on".

(4) **Power Button/Light -** Press this button to turn the computer on and off. The power-on indicator lights when the system power is on.

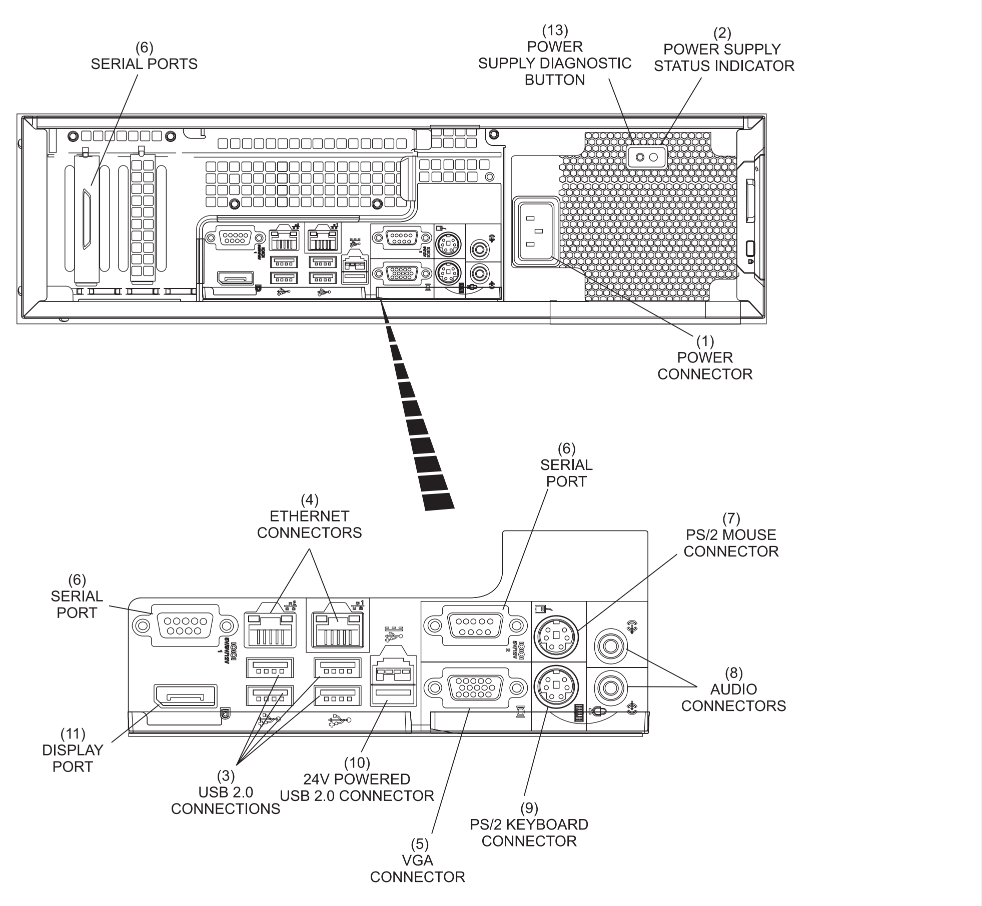
(5) **NMI Button -** Not Used

(6) **USB Connector -** Connects USB devices to the system.

Rear Panel Connectors


(1)
POWER
CONNECTION
(3)
USB 2.0
CONNECTORS
(4)
ETHERNET
CONNECTORS
1
2
(2)
POWER SUPPLY
STATUS INDICATOR
(5)
VGA
CONNECTOR
(6)
SERIAL
PORT
IOIOI
(6)
SERIAL PORTS

Typical Rear Panel Connectors - Server PC (PowerEdge T310 Shown)


(6)
SERIAL PORTS
(13)
POWER
SUPPLY DIAGNOSTIC
BUTTON
(2)
POWER SUPPLY
STATUS INDICATOR
(1)
POWER
CONNECTOR
(6)
SERIAL
PORT
(4)
ETHERNET
CONNECTORS
(7)
PS/2 MOUSE
CONNECTOR
(6)
SERIAL
PORT
(8)
AUDIO
CONNECTORS
(11)
DISPLAY
PORT
(3)
USB 2.0
CONNECTIONS
(10)
24V POWERED
USB 2.0 CONNECTOR
(9)
PS/2 KEYBOARD
CONNECTOR
(5)
VGA
CONNECTOR

Rear Panel Connectors - Client (Optiplex XE Shown)

Functions of the connectors and controls on the back of the computer may include:

(1) **Power Connector -** Connection from computer to an AC power source.

(2) **Power Supply Status Indicator -** Indicates the status of the power supply.

Off - AC power is not connected or system is in standby mode.
Green - The system is on and the power supply is providing DC power to the system.
Amber - There is a problem with the power supply.
Alternating green and amber - Indicates that the power supply is mismatched with the other power supply.

(3) **USB 2.0 Connections -** The USB ports can be used to connect standard USB devices such as a printer, mouse or keyboard.

(4) **Ethernet Connectors -** Ethernet port 1 is used to network the Vector computers and Scorer Computers. Port2 of the server can be used to connect the server to a 2nd network such as one that allows connection to the internet.

(5) **VGA Connector -** A 15 pin connector for video to the VGA monitor.

(6) **Serial Port -** The serial ports allow the connection of external devices to the computer. The port assignments vary based on the equipment installed. The ports are typically connected as follows:

COM 1	TouchScreen
COM 2	Pole Display, Receipt Printer, and Cash Drawer
COM 3	Modem (Optional at server only)
COM 4	Audio Control Unit

(7) **PS/2 Mouse Connector -** Connection for the 6 pin DIN connector coming from a PS/2 mouse. In most cases a USB port is used to connect the mouse.

(8) **Audio Connectors -** Not Used

(9) **PS/2 Keyboard Connector -** Connection for the 6 pin DIN cable coming from the keyboard. In most cases a USB port is used to connect the mouse.

(10) **24V Powered USB 2.0 Connector -** Not Used

(11) **DisplayPort -** Not Used.

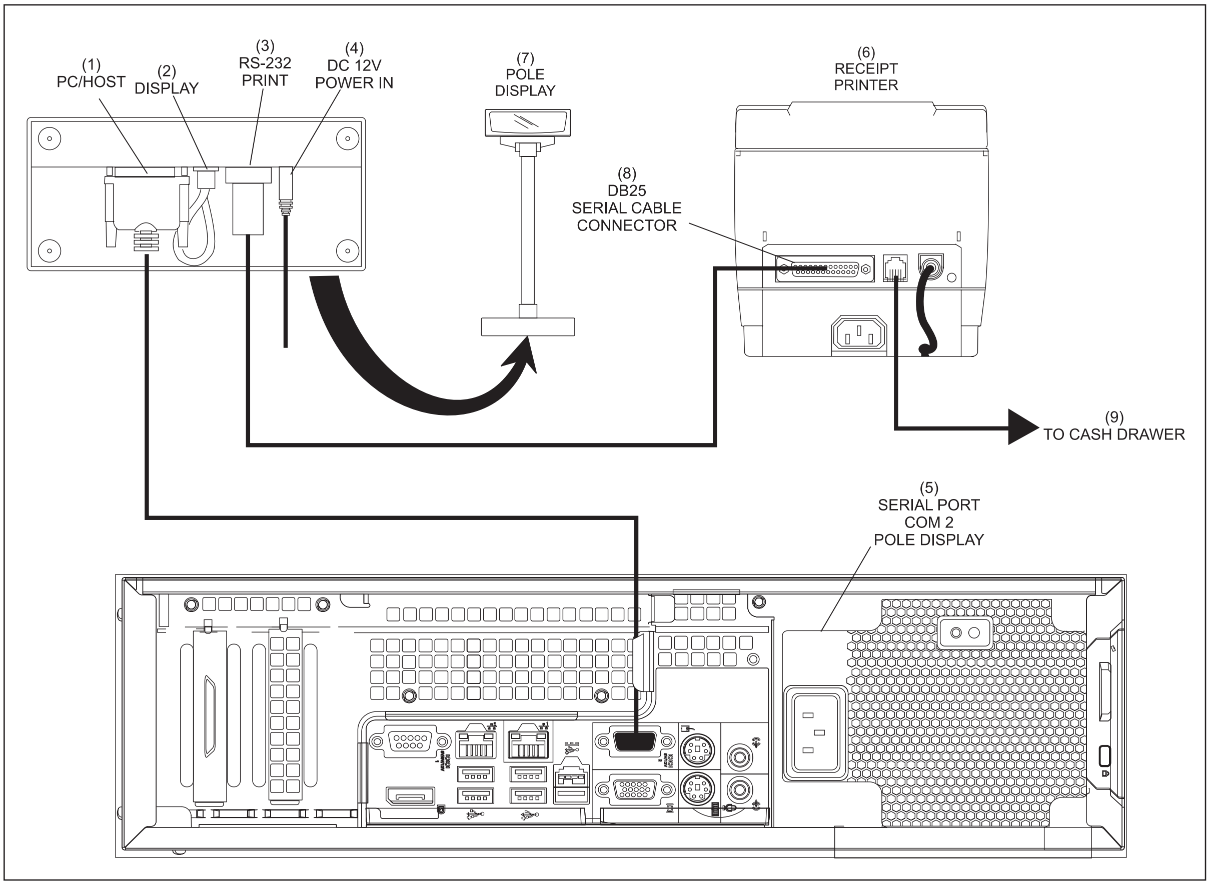
VGA COLOR MONITORS

The VGA color monitor allows the operator to get information from the Vector/Vector Plus computer. Through this terminal, the operator can perform all the functions needed to operate the scoring system. This includes assigned and cashing out lanes, programming prices, sales tax, colors and other bowling information, and setting up and processing leagues or financial reports.

Monitors are available in LCD or LCD touchscreen configurations.

POLE DISPLAY /RECEIPT PRINTER/ CASH DRAWER

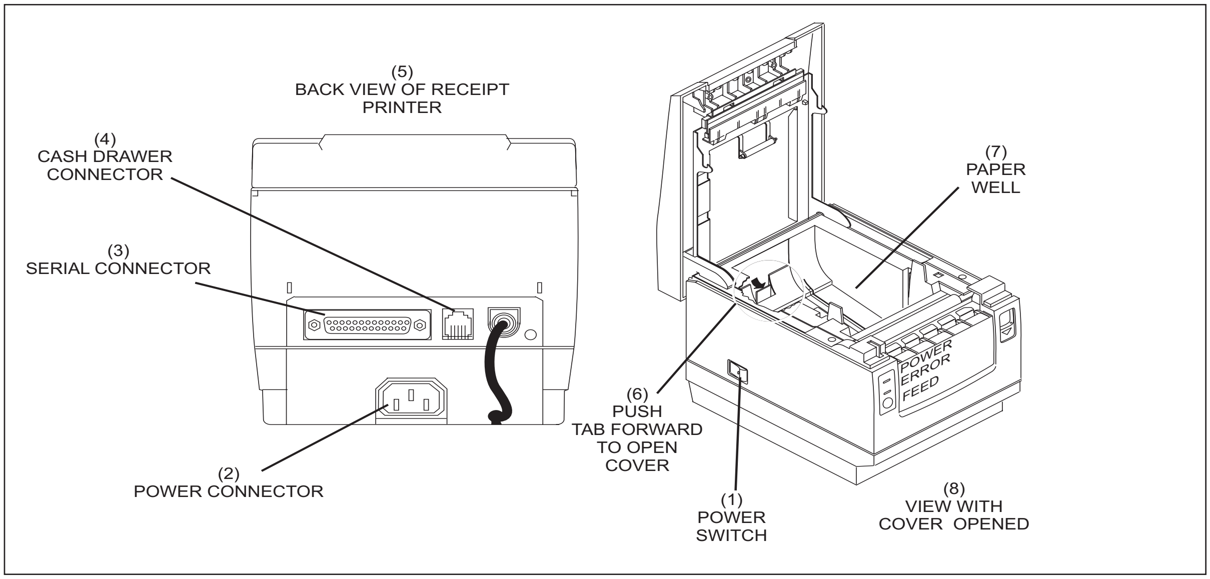
The pole display, receipt printer, and cash drawer are connected to the Vector computer at a common comport (usually Com2).   Refer to figure titled *POS Equipment Wiring*


(1)
PC/HOST
(2)
DISPLAY
(3)
RS-232
PRINT
(4)
DC 12V
POWER IN
(7)
POLE
DISPLAY
(6)
RECEIPT
PRINTER
(8)
DB25
SERIAL CABLE
CONNECTOR
(9)
TO CASH DRAWER
(5)
SERIAL PORT
COM 2
POLE DISPLAY

POS Equipment Wiring

(1) PC/HOST
(2) DISPLAY
(3) RS-232 PRINT
(4) DC 12V POWER IN
(5) SERIAL PORT COM2 POLE DISPLAY
(6) RECEIPT PRINTER
(7) POLE DISPLAY
(8) DB25 SERIAL CABLE CONNECTOR
(9) TO CASH DRAWER

Receipt Printer


(5)
BACK VIEW OF RECEIPT PRINTER
(4)
CASH DRAWER CONNECTOR
(3)
SERIAL CONNECTOR
(2)
POWER CONNECTOR
(6)
PUSH TAB FORWARD TO OPEN COVER
(1)
POWER SWITCH
(7)
PAPER WELL
POWER
ERROR
FEED
(8)
VIEW WITH COVER OPENED

Receipt Printer

(1) POWER SWITCH
(2) POWER CONNECTOR
(3) SERIAL CONNECTOR
(4) CASH DRAWER CONNECTOR
(5) BACK VIEW OF RECEIPT PRINTER
(6) PUSH TAB FORWARD TO OPEN COVER
(7) PAPER WELL
(8) VIEW WITH COVER OPENED

(1) **Power Switch -** This switch controls power to the printer.

(2) **Power Connector -** Input connector for main power.

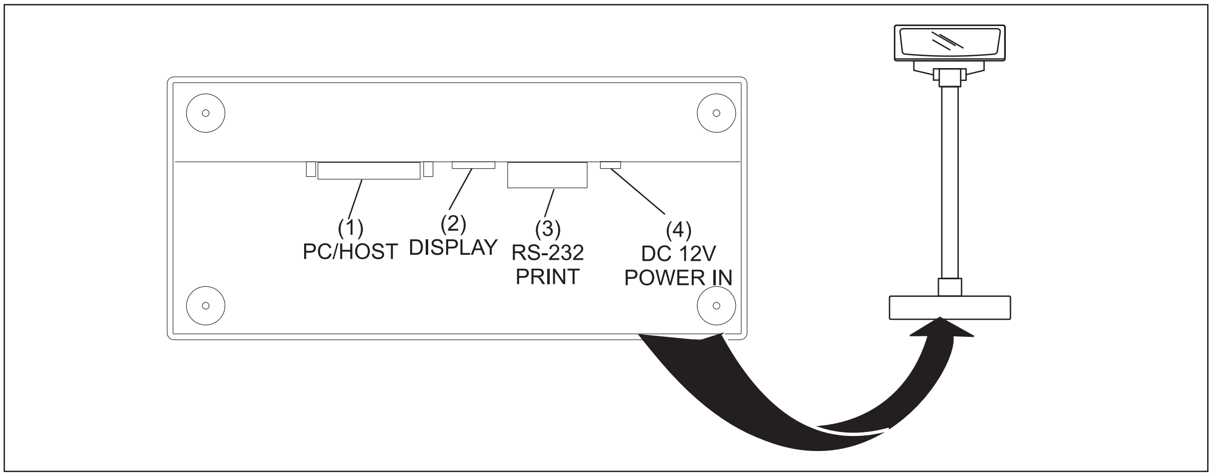
(3) **Serial Connector -** Connection for serial cable from Vector Computer.

(4) **Cash Drawer -** Connection to the cash drawer.

Pole Display

The optional pole display shows the amount of money a customer owes as well as the amount of change the customer will receive.

The display connects directly to the client or server computer. A connector on the bottom of the display allows the connection of the receipt printer. See figure titled *Pole Display.*



Pole Display

(1) **PC/Host -** Connector to attach the display to the computer. This connection supplies serial communications to the pole display.

(2) **Display -** Connection for the display's LED readout PCB.

(3) **Receipt Printer -** Connection to the receipt printer for the POS (point of sale) terminal. This connection allows serial communication entering the PC/Host connector to continue to the printer.

(4) **DC12V -** Power connector for the pole display.

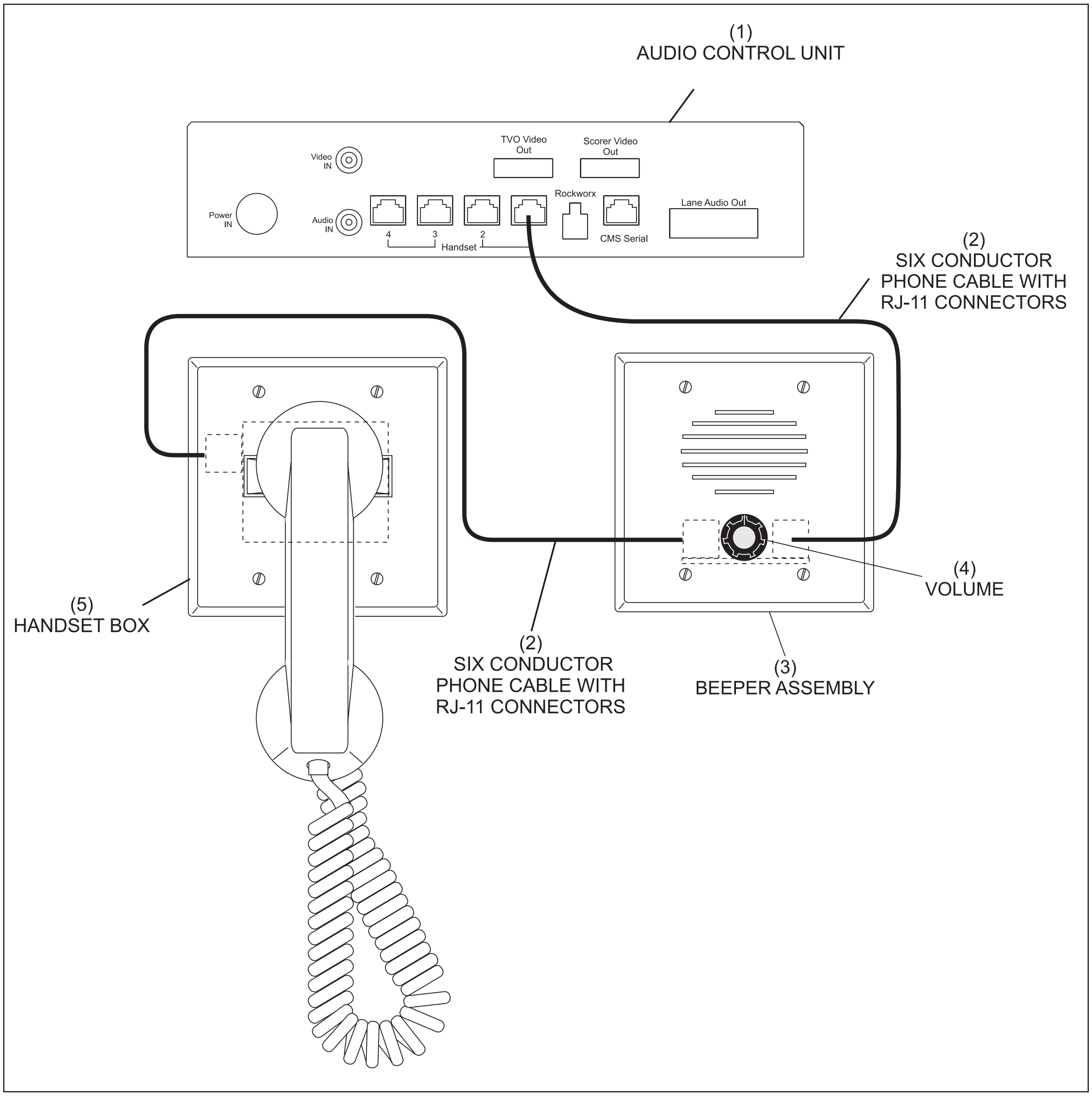
Cash Drawer

The primary function of the cash drawer is to provide a place to put money received from customers. For the convenience of the control desk operator, the cash drawer opens automatically whenever a payment key, such as "cash" is selected. If the operator is assigning or cashing-out a lane, the pinsetter and scorer will turn on or off when the drawer is closed.

Power to open the drawer comes from the receipt printer. For the drawer function properly the receipt printer must be on and cannot be in an error state.

INTERCOM BEEPER ASSEMBLY

The intercom beeper assembly provides an audible indication whenever an intercom request is received from a console. The box is connected to the audio/video unit through a 6-conductor telephone cable, then to the handset box via another 6-conductor cable. A volume control on the assembly allows the control desk operator to adjust the volume level of the beep. Refer to the figure titled *Beeper Assembly*.


(1)
AUDIO CONTROL UNIT
Video IN
TVO Video Out
Scorer Video Out
Power IN
Audio IN
4
3
2
Handset
Rockworx
CMS Serial
Lane Audio Out
(2)
SIX CONDUCTOR PHONE CABLE WITH RJ-11 CONNECTORS
(4)
VOLUME
(5)
HANDSET BOX
(2)
SIX CONDUCTOR PHONE CABLE WITH RJ-11 CONNECTORS
(3)
BEEPER ASSEMBLY

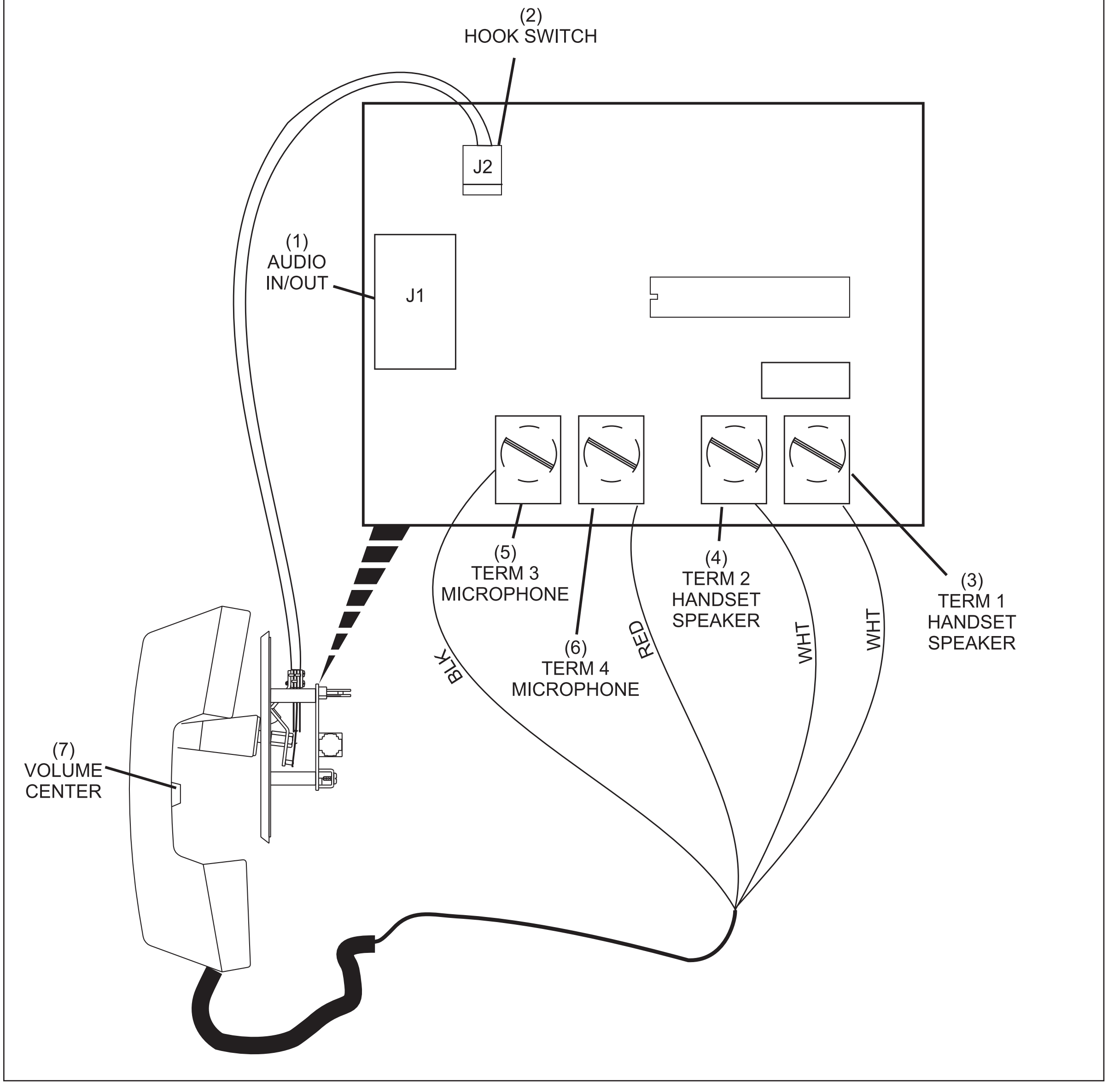
Beeper Assembly

(1) AUDIO CONTROL UNIT
(2) SIX CONDUCTOR PHONE CABLE WITH RJ-11 CONNECTORS
(3) BEEPER ASSEMBLY
(4) VOLUME
(5) HANDSET BOX

INTERCOM HANDSET/SWITCH BOX

The intercom handset/switch box allows an intercom handset to connect to the scoring systems. The box connects to the audio/video unit through an intercom beeper assembly and provides a telephone style intercom handset that allows the operator to have a two-way conversation with a bowler standing at a scorer console. Up to two boxes can be connected to the audio/video unit.

Inside each handset/switch box is a circuit board that handles all the functions for the intercom. This board is called the Handset Interface PCB. Refer to the figure titled *Handset Interface PCB (Part No. 57-300183-000).*


(2)
HOOK SWITCH
J2
(1)
AUDIO
IN/OUT
J1
(5)
TERM 3
MICROPHONE
(6)
TERM 4
MICROPHONE
(4)
TERM 2
HANDSET
SPEAKER
(3)
TERM 1
HANDSET
SPEAKER
BLK
RED
WHT
WHT
(7)
VOLUME
CENTER

Handset Interface PCB (Part No. 57-300183-000)

The function of the components on the Handset Interface PCB are:

(1) **Audio In/Out (J1) -** Telephone type connector (RJ-11) used to connect the box to the audio/video unit. This allows the transfer of the “audio” to and from the scoring systems.

(2) **Hook Switch (J2) -** Connection to the hook switch located in the box. The switch allows the operator to connect to the console simply by lifting the handset. Replacing the handset on the “hook” disconnects the intercom.

(3) **Handset Speaker (Term 1) -** Connection to the speaker in the earpiece of the handset.

(4) **Handset Speaker (Term 2) -** Connection to the speaker in the earpiece of the handset.

(5) **Microphone (Term 3) -** Connection to the microphone in the mouthpiece of the handset.

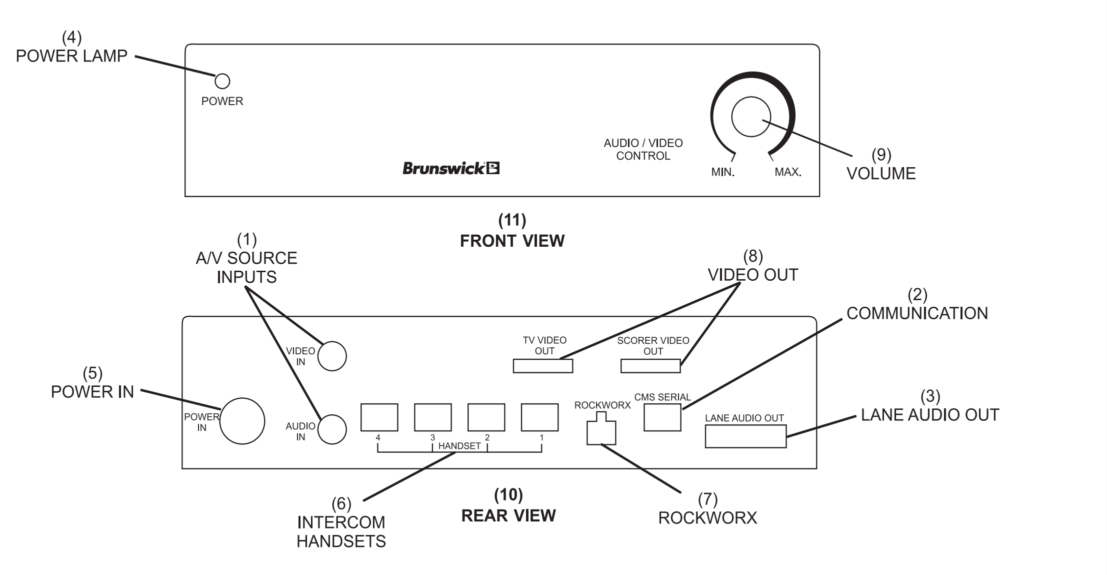
(6) **Microphone (Term 4) -** Connection to the microphone in the mouthpiece of the handset.

(7) **Volume Control -** The volume control allows the control desk operator to adjust the audio level of the earpiece of the handset.

AUDIO CONTROL UNIT

External

The audio control unit is responsible for interfacing the intercom audio to the scoring system. Refer to the figure titled *Audio Control Unit - External View.*


(4)
POWER LAMP
POWER
AUDIO / VIDEO
CONTROL
Brunswick
MIN.
MAX.
(9)
VOLUME
(11)
FRONT VIEW
(1)
A/V SOURCE
INPUTS
(8)
VIDEO OUT
(2)
COMMUNICATION
(5)
POWER IN
VIDEO
IN
TV VIDEO
OUT
SCORER VIDEO
OUT
POWER
IN
AUDIO
IN
4
3
2
1
HANDSET
ROCKWORX
CMS SERIAL
LANE AUDIO OUT
(3)
LANE AUDIO OUT
(6)
INTERCOM
HANDSETS
(10)
REAR VIEW
(7)
ROCKWORX

Audio Control Unit - External View

(1) A/V SOURCE INPUTS
(2) COMMUNICATION
(3) LANE AUDIO OUT
(4) POWER LAMP
(5) POWER IN
(6) INTERCOM HANDSETS
(7) ROCKWORX
(8) VIDEO OUT
(9) VOLUME
(10) REAR VIEW
(11) FRONT VIEW

The function of the connectors on the audio control unit are:

(1) A/V Source Inputs - Not used

(2) Communications - Connection for the communication coming from the Vector/Vector Plus computer.

(3) Lane Audio Out - Output connector for the “global audio” cable that delivers the intercom audios going to the scorer consoles.

(4) Power Lamp - The light is on whenever power is supplied to the box.

(5) Power In - Main power input to the box. The input to the box is 5 VDC, 12 VDC and -12 VDC.

(6) Intercom Handsets - Connection for the cable(s) coming from the intercom handset/switch box(es). Two handsets can be attached to the AV box. Do not use inputs 3 or 4.

(7) Rockworx - Not used.

(8) Video Out (2) - Not used.

(10) Volume- Not used.

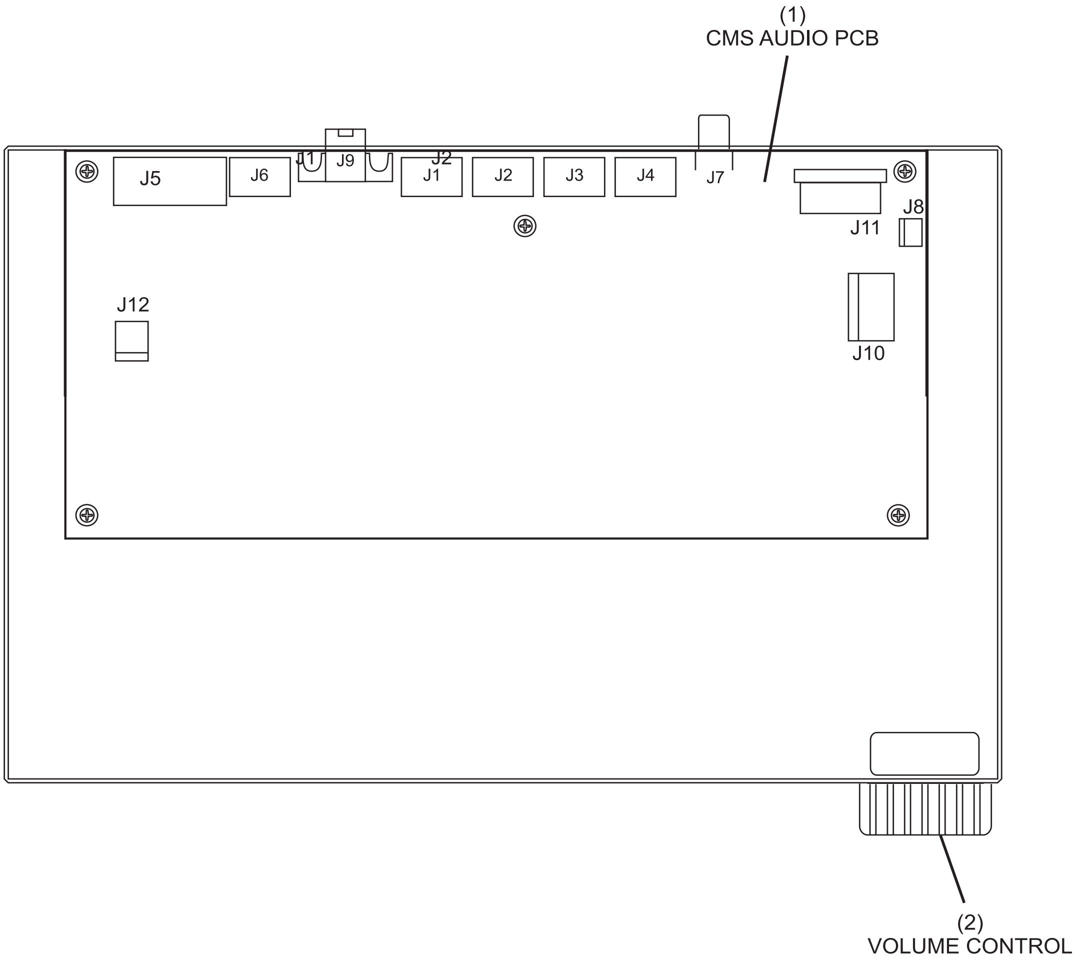
Internal

Inside the audio control unit is a single circuit board: the CMS Audio PCB.

The CMS Audio PCB adapts the intercom audio(s) which is then delivered to the consoles through the global audio cable.

A communication cable connected to the Vector/Vector Plus computer allows telephone style functionality for the intercom.

The board is powered by an external power supply. Refer to the figure titled *Audio Control Unit - Internal View*.


(1)
CMS AUDIO PCB
J5
J6
J1
J9
J2
J1
J2
J3
J4
J7
J8
J11
J12
J10
(2)
VOLUME CONTROL

Audio Control Unit - Internal View

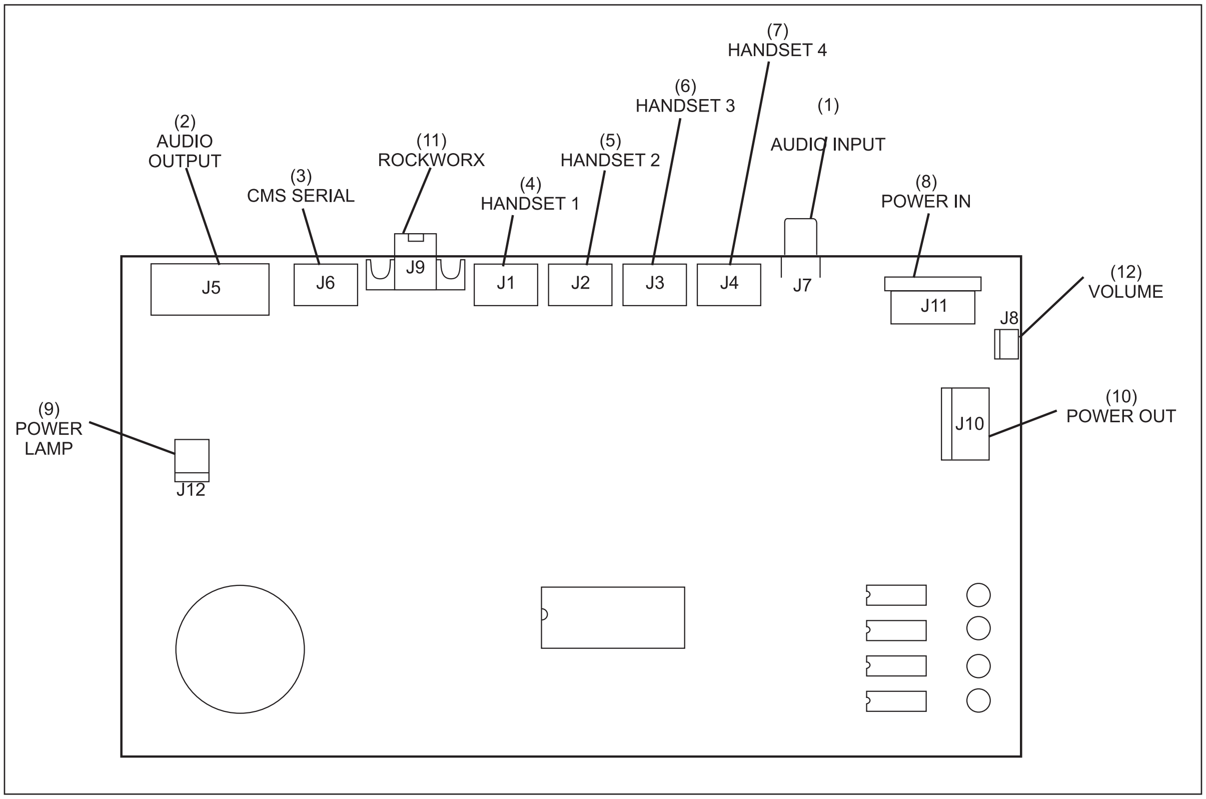
(1) CMS AUDIO PCB

(2) VOLUME CONTROL

CMS Audio PCB

The CMS Audio PCB is responsible for interfacing the up to two intercom handsets to the scoring system. The audio (global audio) is amplified by the PCB prior to being sent out to each scorer console.

The PCB interfaces the intercom audios to the system by allowing simultaneous conversation between the Control Desk and two consoles. In addition, the PCB allows the bowler and the control desk to talk at the same time, eliminating the need to press a button to talk or listen. Refer to the figure titled *CMS Audio PCB*.


(7) HANDSET 4
(6) HANDSET 3
(1) AUDIO INPUT
(2) AUDIO OUTPUT
(11) ROCKWORX
(5) HANDSET 2
(3) CMS SERIAL
(4) HANDSET 1
(8) POWER IN
J5
J6
J9
J1
J2
J3
J4
J7
J11
J8
(12) VOLUME
(9) POWER LAMP
J12
J10
(10) POWER OUT

CMS Audio PCB

The functions of the components and connections on the Audio PCB are as follows:

(1) Audio Input (J7) - Not Used

(2) Audio Output (J5) - Connection for the intercom audio being sent to the console flatscreens or keypads for each lane. (Referred to as Lane Audio on the back of the unit).

(3) CMS Serial (J6) - Connection for the communication coming from a Vector/Vector Plus computer. This communication allows the computer to determine which intercom handset has been used to answer an intercom request. Communication is then sent to the scorer computer of the requesting lane so that the proper intercom line is selected.

(4) Handset 1 (J1) - Connection for cable coming from the intercom handset/switch box for the first handset.

(5) Handset 2 (J2) - Connection for cable coming from the intercom handset/switch box for a second handset.

(6) **Handset 3 (J3) -** Not used

(7) **Handset 4 (J4) -** Not used

(8) **Power In (J11)-** Main power input to the box. The input to the box is 5 VDC, 12 VDC, and -12 VDC.

(9) **Power Lamp (J12) -** Connection to the power indication LED located on the front of the unit.

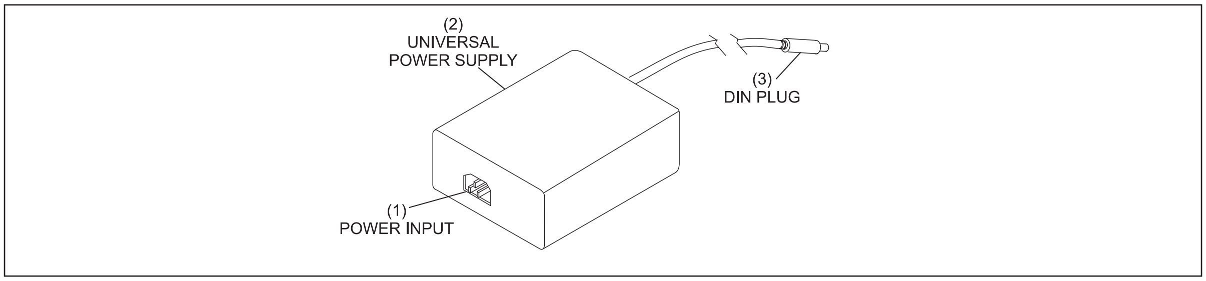
(10) **Power Out (J10) -** Not used.

(11) **Rockworx (J9) -** Not used.

(12) **Volume (J8) -** Not used.

Power Supply Unit

The power supply unit provides the audio control unit with the 5 VDC, 12 VDC, and -12 VDC. The input to the power supply unit can be either 120 VAC or 240 VAC. The supply will automatically adapt to either input and supply the proper output voltage.. Refer to the figure titled *Power Supply Unit*.



Power Supply Unit

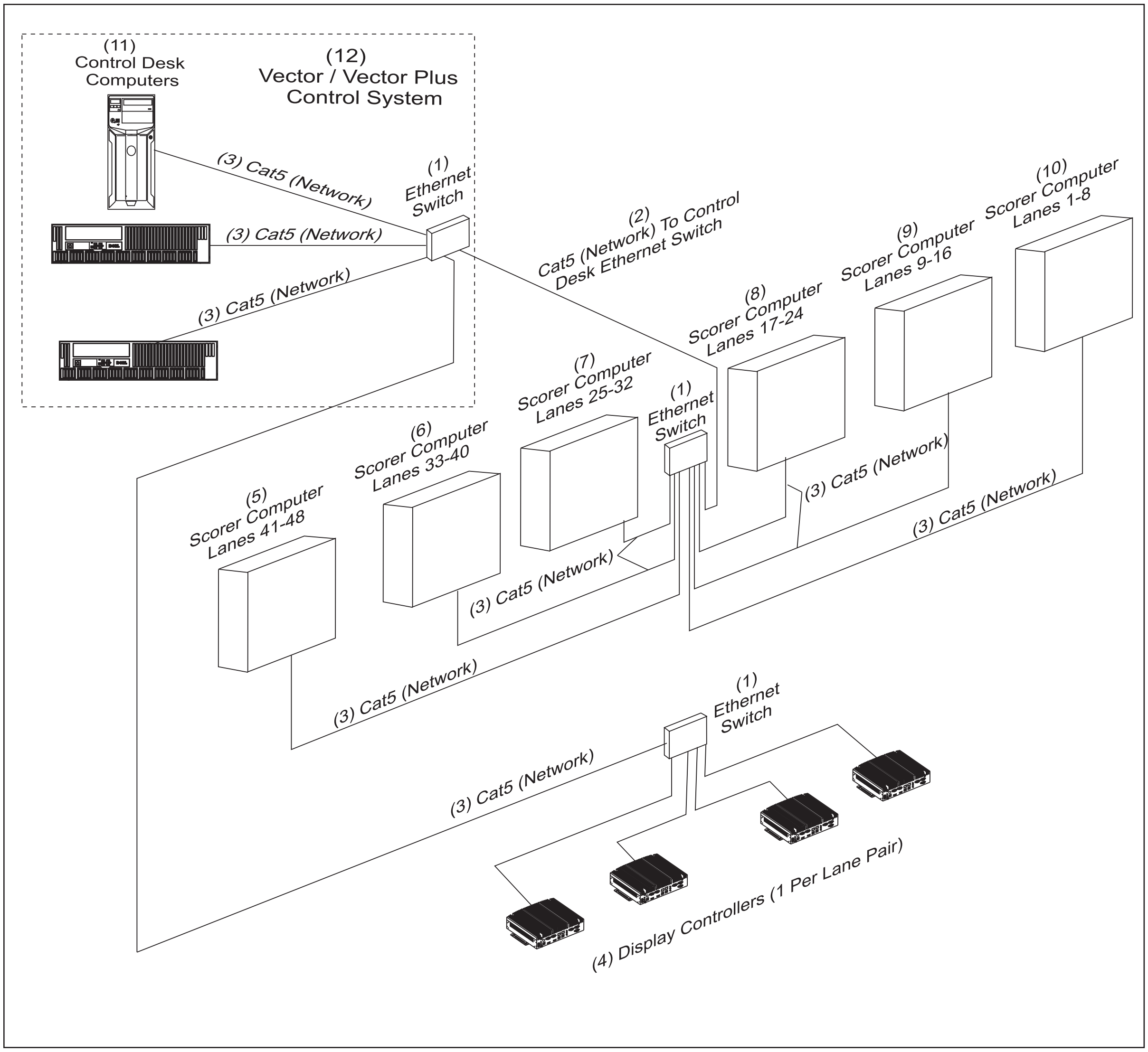
(1) POWER INPUT

(2) UNIVERSAL POWER SUPPLY

(3) DEUTSCHE INDUSTRY NORM PLUG

ETHERNET SWITCHES

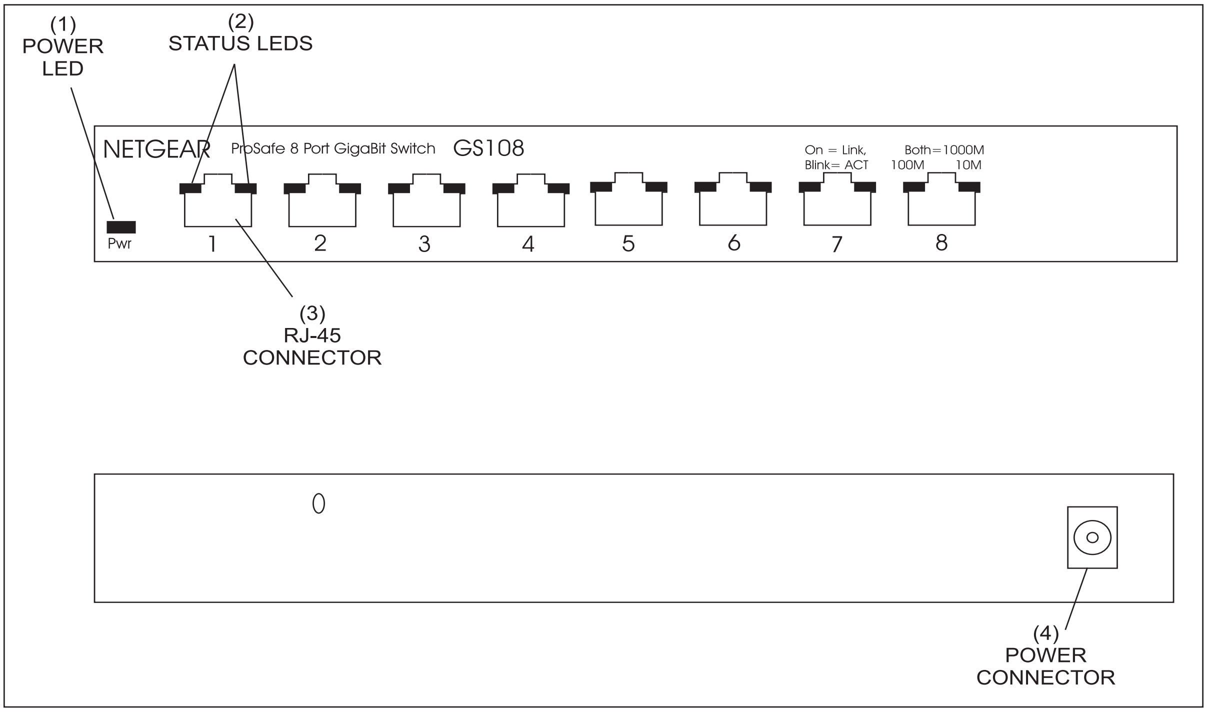
The Ethernet switches allow the control desk computer(s), the scorer computers, and the Display Controllers to connect together in a high speed network. The switches provides two way communication (full duplex) so the computers can send and receive data at the same time. The switches also provide each of it outputs (ports) dedicated bandwidth to increase the efficiency of the network. Refer to the figures titled *Ethernet Switch Cabling, Netgear ProSafe GS108, and Netgear ProSafe Plus JFS524E*


(11) Control Desk Computers
(12) Vector / Vector Plus Control System
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(3) Cat5 (Network)
(2) Cat5 (Network) To Control Desk Ethernet Switch
(10) Scorer Computer Lanes 1-8
(9) Scorer Computer Lanes 9-16
(8) Scorer Computer Lanes 17-24
(7) Scorer Computer Lanes 25-32
(1) Ethernet Switch
(6) Scorer Computer Lanes 33-40
(5) Scorer Computer Lanes 41-48
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(4) Display Controllers (1 Per Lane Pair)

Ethernet Switch Cabling

(1) ETHERNET SWITCH
(2) CAT5 (NETWORK) TO CONTROL DESK SWITCH
(3) CAT5 (NETWORK)
(4) DISPLAY CONTROLLERS (1 PER LANE PAIR)
(5) SCORER COMPUTER LANES 41-48
(6) SCORER COMPUTER LANES 33-40
(7) SCORER COMPUTER LANES 25-32
(8) SCORER COMPUTER LANES 17-24
(9) SCORER COMPUTER LANES 9-16
(10) SCORER COMPUTER LANES 1-8
(11) CONTROL DESK COMPUTERS
(12) VECTOR / VECTOR PLUS CONTROL SYSTEM

Netgear Prosafe - GS108


(1)
POWER
LED
(2)
STATUS LEDS
NETGEAR
ProSafe 8 Port GigaBit Switch
GS108
On = Link,
Blink= ACT
Both=1000M
100M
10M
Pwr
1
2
3
4
5
6
7
8
(3)
RJ-45
CONNECTOR
(4)
POWER
CONNECTOR

Netgear GS108

The functions of the components and connectors on the Netgear GS108 8 Port switch are:

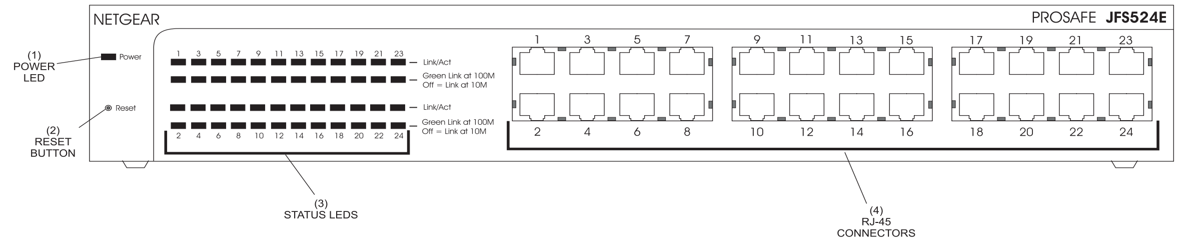
(1) **Power LED -** This LED indicates when the Ethernet switch is powered on.

(2) **Port Status LEDs -** These LEDs indicate the status of each RJ-45 connector. When the left LED is green , a link with a communication rate of 100M is established between the port and a computer or second switch. If the right LED is lit a 10M link is established. Both LEDs light to indicate a 1000M link. Flashing LED to indicate activity is occurring through the port.

(3) **RJ-45 Connector -** Connection (port) for the Cat5 ethernet cables attached to each scorer computers and/or ethernet Switch located at the control desk. Each port is capable of auto sensing for 10Mbps, 100Mbps or 1000Mbps operation.

(4) **Power Connector -** Input for power coming from the A/C power adaptor. Only use the power adapter that is supplied with the switch.

Netgear Prosafe - JFS524E


NETGEAR
PROSAFE JFS524E
(1) POWER LED
Power
(2) RESET BUTTON
Reset
1 3 5 7 9 11 13 15 17 19 21 23
Link/Act
Green Link at 100M
Off = Link at 10M
Link/Act
Green Link at 100M
Off = Link at 10M
2 4 6 8 10 12 14 16 18 20 22 24
1 3 5 7 9 11 13 15 17 19 21 23
2 4 6 8 10 12 14 16 18 20 22 24
(3) STATUS LEDS
(4) RJ-45 CONNECTORS

Netgear Prosafe JFS524E

The functions of the components and connectors on the Netgear JFS524E 24 Port switch are:

(1) **Power LED -** This LED indicates when the Ethernet switch is powered on.

(2) **Reset Button -** Push this button to restart the switch. Push and hold the button to restore the switch settings to factory defaults.

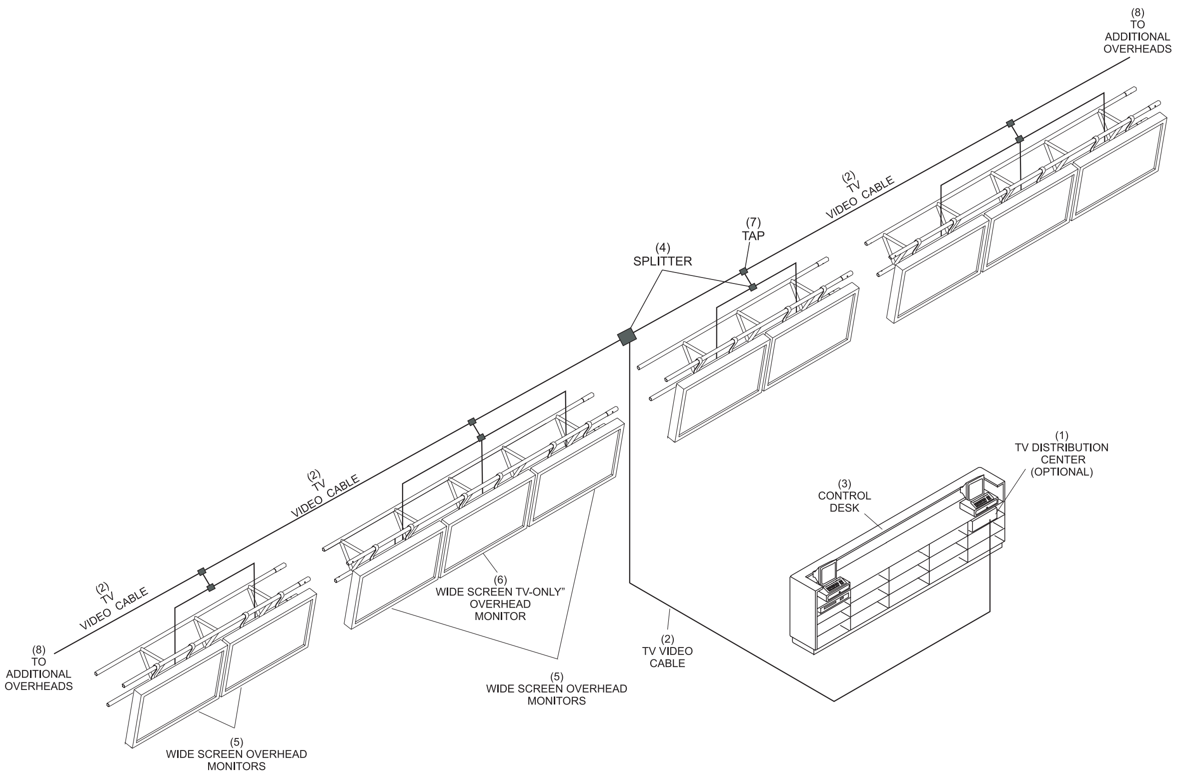
(3) **Status LEDs -** These LEDs indicate the status of each RJ-45 connector. The Link/Act LEDs lights when there is a device connected to the corresponding port. A flashing Link/Act LED indicates information is being transmitted though the port.
The speed LED located below each Link/Act LED indicates the speed at which the devices are communicating. A green LED indicates a communication rate of 100M. If the LED is off, a 10M link has been established.

(3) **RJ-45 Connector -** Connection (port) for the Cat5 ethernet cables attached to each display controller and the ethernet switch located at the control desk or office. Each port is capable of auto sensing for 10Mbps or 100Mbps.

TV VIDEO DISTRIBUTION

The TV video distribution system works similar to a typical cable tv system. A distribution center typically located at the control desk takes the audio/video from each source and assigns a unique “TV channel” to each of them, then combines the channels onto a single coax cable. From there, the coax cable is distributed to the display monitors in the center. To view a particular source, the user simply selects the desired channel to show the contents of that channel. The system can connect to any number of monitors or bowling center size, up to 96 lanes. Refer to the figure titled *Vector-HD TV Video Cabling.*

The system can distribute any combination of HD signals (1080p, 1080i, and 720p) and SD (Standard Definition) signals, 480P and 480i. The system can mix digital video signals (1080p, 1080i, 720p, 480p, and 480i) and analog video signals (480i only).


(8) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(7) TAP
(4) SPLITTER
(2) TV VIDEO CABLE
(1) TV DISTRIBUTION CENTER (OPTIONAL)
(3) CONTROL DESK
(2) TV VIDEO CABLE
(6) WIDE SCREEN TV-ONLY” OVERHEAD MONITOR
(2) TV VIDEO CABLE
(8) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(5) WIDE SCREEN OVERHEAD MONITORS
(5) WIDE SCREEN OVERHEAD MONITORS

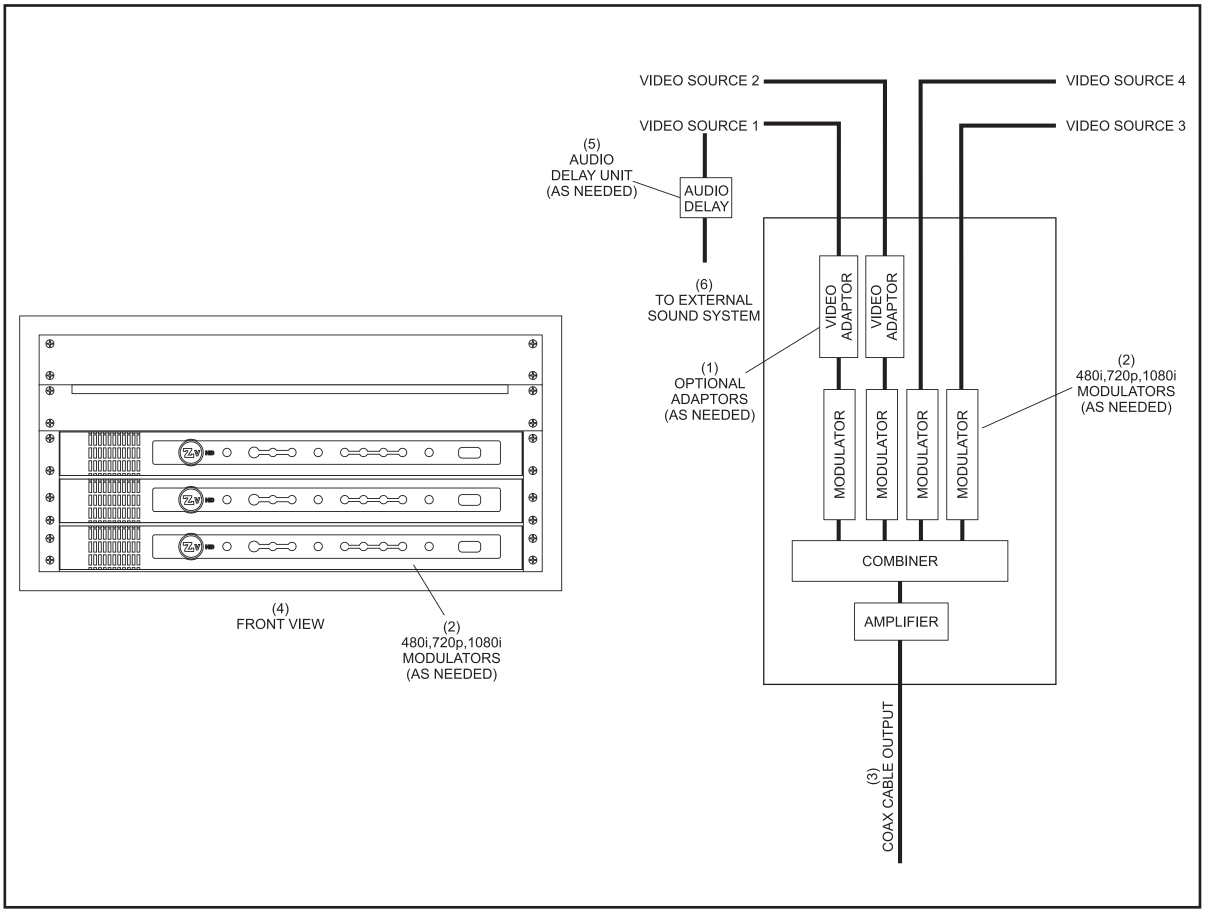
Vector-HD TV Video Cabling

1) TV DISTRIBUTION CENTER
(2) TV VIDEO CABLES
(3) CONTROL DESK
(4) SPLITTER
(5) WIDE SCREEN OVERHEAD MONITORS
(6) WIDE SCREEN TV-ONLY OVERHEAD MONITORS
(7) TAP
(8) TO ADDITIONAL OVERHEADS

TV Distribution Center

The TV Distribution center consists of video adaptors (as needed), a modulator for each signal source, a signal combiner, and a signal amplifier.

The distribution center can accept a variety of signal sources such as satellite boxes, cable set-top boxes, or DVD/Blu-ray players. Modulators mounted inside the center take the audio and video signals from the sources and “assigns” a unique “TV” channel to each of them. These channels are then combined into a single coaxial cable, amplified, and distributed to the overhead monitors.   Refer to the figure titled *TV Distribution Center.*


VIDEO SOURCE 2
VIDEO SOURCE 4
VIDEO SOURCE 1
VIDEO SOURCE 3
(5)
AUDIO
DELAY UNIT
(AS NEEDED)
AUDIO
DELAY
(6)
TO EXTERNAL
SOUND SYSTEM
VIDEO
ADAPTOR
VIDEO
ADAPTOR
(1)
OPTIONAL
ADAPTORS
(AS NEEDED)
(2)
480i,720p,1080i
MODULATORS
(AS NEEDED)
MODULATOR
MODULATOR
MODULATOR
MODULATOR
COMBINER
AMPLIFIER
(4)
FRONT VIEW
(2)
480i,720p,1080i
MODULATORS
(AS NEEDED)
(3)
COAX CABLE OUTPUT

TV Distribution Center

1) OPTIONAL ADAPTORS (AS NEEDED)
(2) 480I, 720P,1080I MODULATORS (AS NEEDED)
(3) COAX CABLE OUTPUT
4) FRONT VIEW
(5) AUDIO DELAY UNIT (AS NEEDED)
(6) TO EXTERNAL SOUND SYSTEM

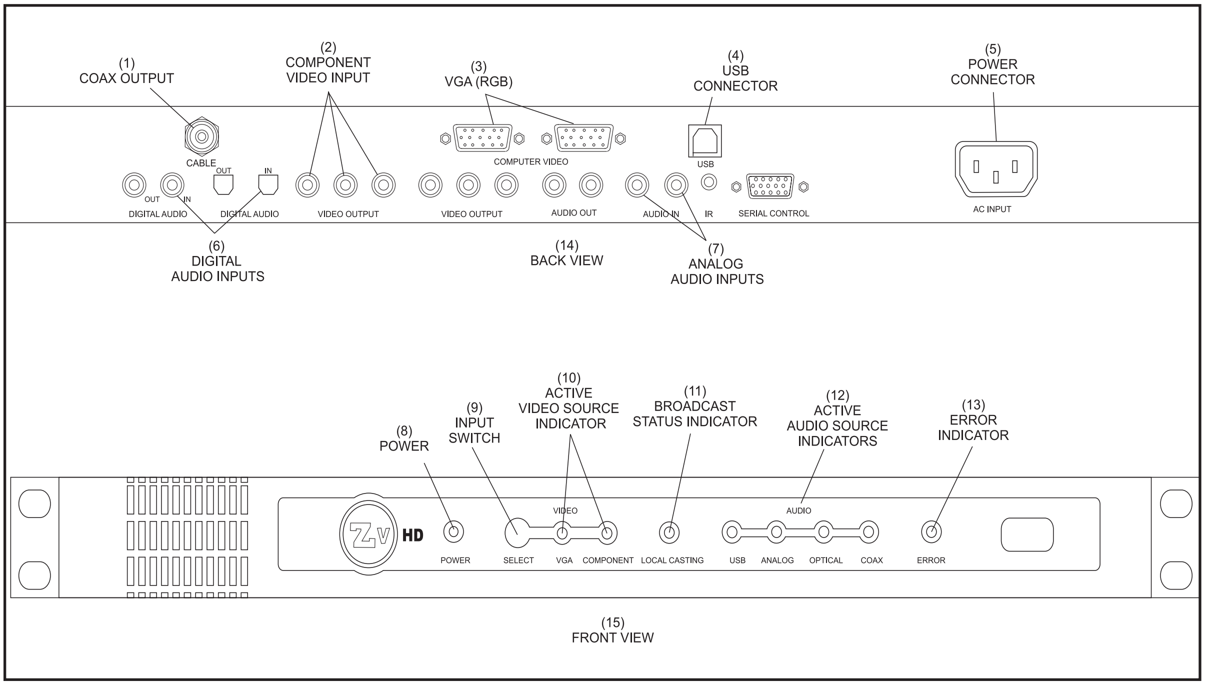
Modulators

Modulators are used to assign a “TV channel” to a video source. Since each source will be assigned a unique “channel”, the number of modulators present in the system is determined by the number of video sources to be displayed on the monitors.

Modulators are available for both standard definition (SD) and high definition (HD) video sources. The SD modulator can handle resolutions up to 480i. This type of modulator is typically used for sources that only provide composite video. Two HD modulators are available. The Enhanced Definition modulator allows for component video sources and can be used for sources with resolutions up to 720p as well as VGA sources. All modulators come pre-adjusted and pre-configured for specific channel outputs. Refer to the figures titled *HD Modulator, ED Modulator, and SD Modulator.*

HD Modulator

The High Definition modulator is the most versatile of the 3 modulators. It can handle component video sources with video resolutions of 480i, 480p, 720p, 1080i, and 1080p and accept the associated audio in either a digital or analog format. It can also handle VGA resolutions up to 1920 x 1080. The HD modulator is factory configured to a specific channel and adjusted for optimum output. Refer to the figure titled *HD Modulator.*


(1) COAX OUTPUT
(2) COMPONENT VIDEO INPUT
(3) VGA (RGB)
(4) USB CONNECTOR
(5) POWER CONNECTOR
CABLE
OUT
IN
COMPUTER VIDEO
USB
DIGITAL AUDIO
DIGITAL AUDIO
VIDEO OUTPUT
VIDEO OUTPUT
AUDIO OUT
AUDIO IN
IR
SERIAL CONTROL
AC INPUT
(6) DIGITAL AUDIO INPUTS
(14) BACK VIEW
(7) ANALOG AUDIO INPUTS
(8) POWER
(9) INPUT SWITCH
(10) ACTIVE VIDEO SOURCE INDICATOR
(11) BROADCAST STATUS INDICATOR
(12) ACTIVE AUDIO SOURCE INDICATORS
(13) ERROR INDICATOR
HD
VIDEO
AUDIO
POWER
SELECT
VGA
COMPONENT
LOCAL CASTING
USB
ANALOG
OPTICAL
COAX
ERROR
(15) FRONT VIEW

HD Modulator

The functions of the components and connectors on the HD modulator are:

(1) **Coax Output -** Coax cable output for channel encoded audio/video signal.

(2) **Component Video Input -** Input connections for the component video signal originating from a video source such as a DVD player or HD cable box.

(3) **VGA (RGB) -** Input connections for standard VGA signal originating from a video source such as a computer or digital signage player.

(4) **USB Connector -** Connection for a computer used for advanced configuration of the modulator.

(5) **Power Connector -** 120VAC-240VAC input power connector

(6) **Digital Audio Inputs -** Input connections for either toslink or coax digital audio signal originating from the video source.

(7) **Analog Audio Inputs -** Input connection for analog L/R audio signal originating from the video source.

(8) **Power -** Indicates whether the unit is powered “on”.

(9) **Input Switch -** Switches between Component Video and VGA inputs.

(10) **Active Video Source Indicator -** Indicates which video input is currently selected.

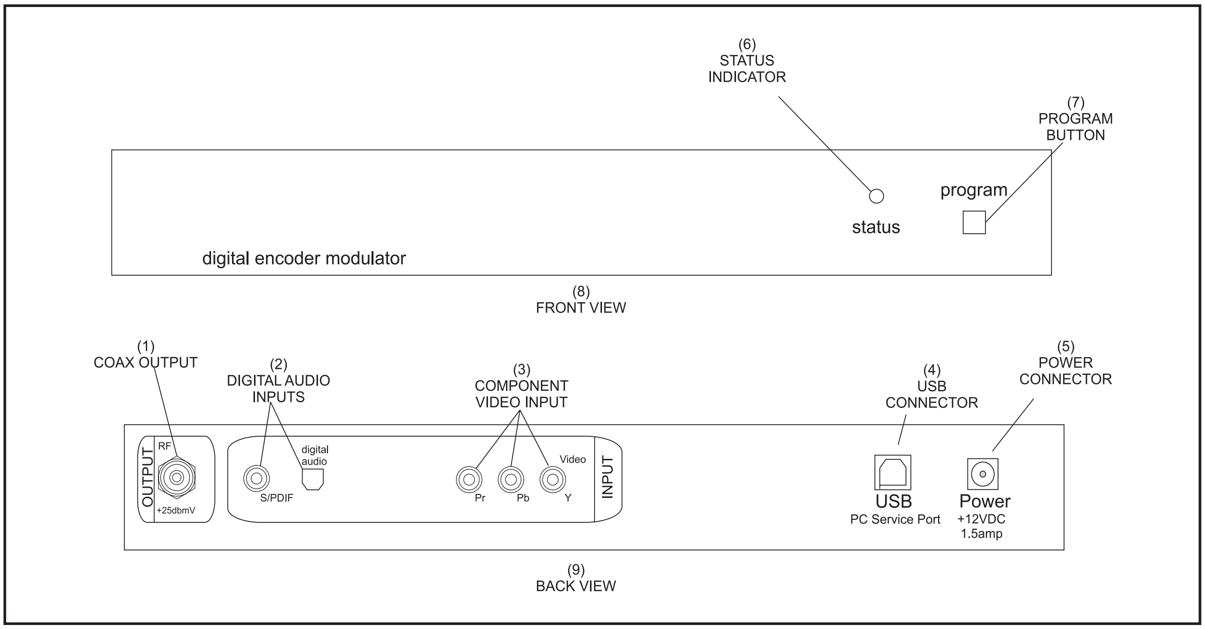
(11) **Broadcast Status Indicator -** Indicates if the video source is being sent to coax output.

(12) **Active Audio Source Indicator -** Indicates which audio input is currently selected.

(13) **Error Indicator -** Indicates that system is booting or there is a system error.

ED Modulator

The Enhanced Definition modulator is a high definition modulator that can handle component video sources with video resolutions of 480i, 480p, and 720p and accept the associated digital audio. Like the HD modulator, the ED modulator is factory configured to a specific channel and adjusted for optimum output. Refer to the figure titled *ED Modulator.*


(6)
STATUS
INDICATOR
(7)
PROGRAM
BUTTON
program
status
digital encoder modulator
(8)
FRONT VIEW
(1)
COAX OUTPUT
(2)
DIGITAL AUDIO
INPUTS
(3)
COMPONENT
VIDEO INPUT
(4)
USB
CONNECTOR
(5)
POWER
CONNECTOR
OUTPUT
RF
+25dbmV
digital
audio
S/PDIF
Pr
Pb
Y
Video
INPUT
USB
PC Service Port
Power
+12VDC
1.5amp
(9)
BACK VIEW

ED Modulator

The functions of the components and connectors on the ED modulator are:

(1) **Coax Output -** Coax cable output for channel encoded audio/video signal.

(2) **Digital Audio Inputs -** Input connections for either toslink or coax digital audio signal originating from the video source.

(3) **Component Video Input -** Input connections for the component video signal originating from a video source such as a DVD player or HD cable box.

(4) **USB Connector -** Connection for a computer used for servicing the modulator.

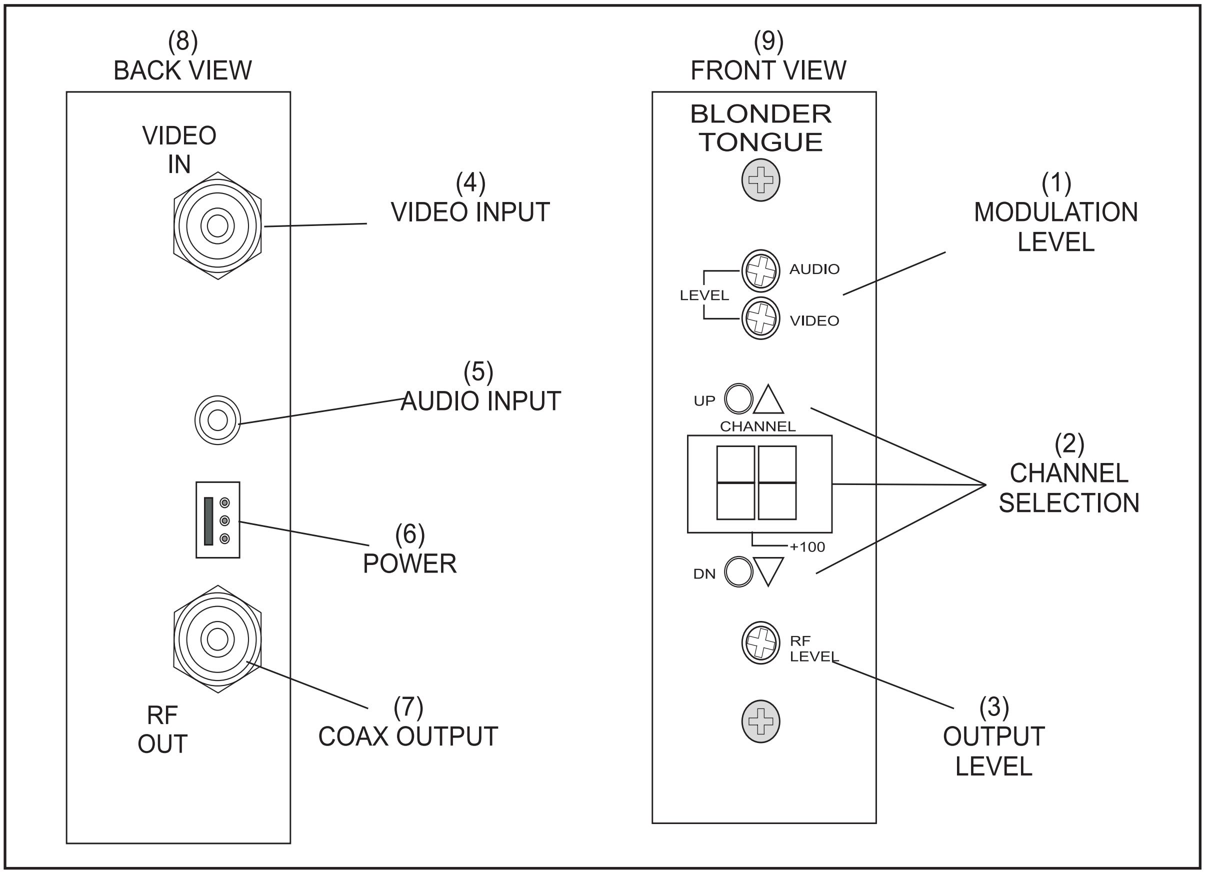
(5) **Power Connector -** +12VDC input power connector.

(6) **Status Indicator -** Light used during programming to indicate the channel assigned to the video.

(7) **Program Button -** Button used to program the channel that will be assigned to the input signal.

SD Modulator

The Standard Definition modulator is can handle composite video sources with video resolutions of up to 480i and accept the associated mono analog audio. The ED modulator is factory configured to a specific channel and adjusted for optimum output. Refer to the figure titled *SD Modulator.*


(8)
BACK VIEW
VIDEO IN
(4) VIDEO INPUT
(5) AUDIO INPUT
(6) POWER
(7) COAX OUTPUT
RF OUT
(9)
FRONT VIEW
BLONDER TONGUE
LEVEL
AUDIO
VIDEO
(1) MODULATION LEVEL
UP
CHANNEL
+100
DN
(2) CHANNEL SELECTION
RF LEVEL
(3) OUTPUT LEVEL

SD Modulator

The functions of the components and connectors on the SD modulator are:

(1) **Modulation Level -** Audio and video modulation level adjustment. This level is preset at the factory and should not be altered.

(2) **Channel Selection -** Press the UP/DN buttons until the desired channel that will be assigned to the input signal is displayed. The +100 indicator will light when channel settings are 100-125.

(3) **Output Level Adjustment -** Adjustment used to set the RF signal level sent out of the unit. This level is preset at the factory and should not be altered.

(4) **Video In -** Input connection for the composite video originating from the A/V source.

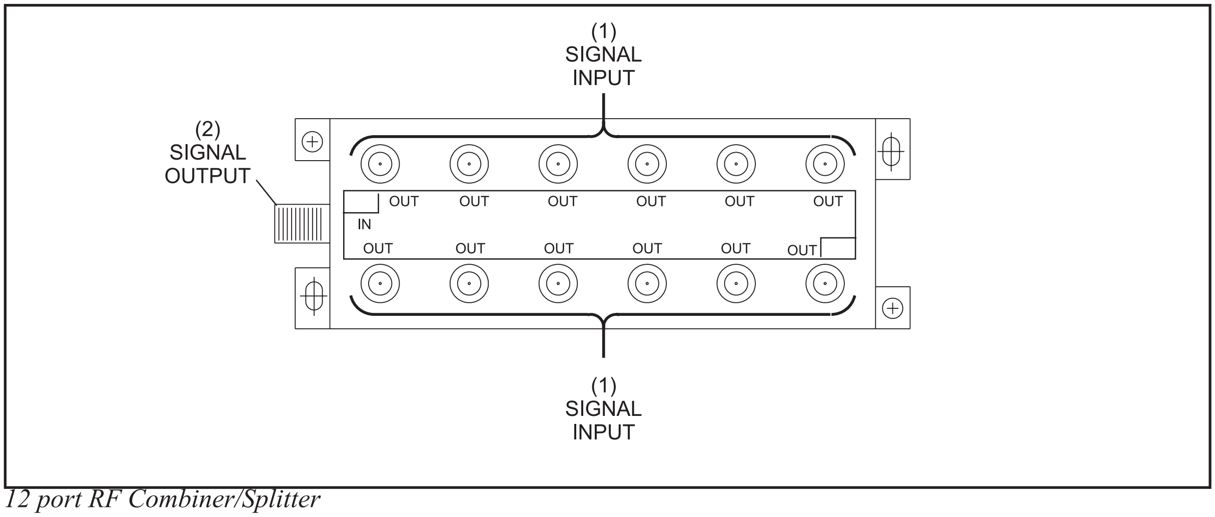
(5) **Audio In -** Input connection for the analog audio originating from the A/V source.

(6) **Power -** Input power connection.

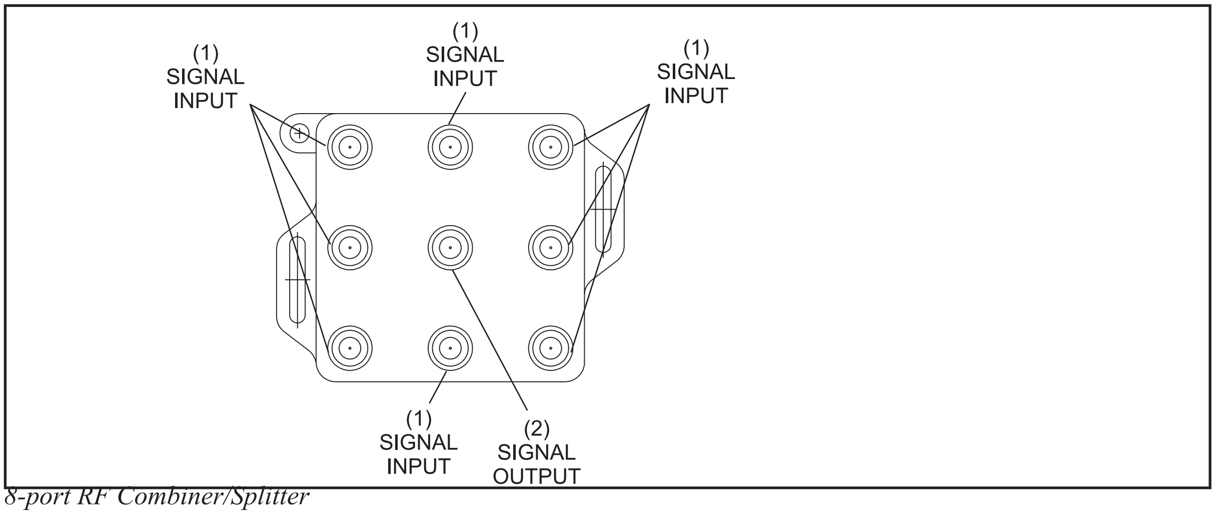
(7) **Coax Out -** Coax cable output for channel encoded audio/video signal.

RF Combiner

The RF combiner takes the output signals from the modulators and combines them into a single RF signal that can be sent to the overhead displays on one coaxial cable. The combiner is an 8-port splitter that is wired in reverse. Used as a combiner, the splitter takes the signals attached to its “out” connections, and outputs them on a single cable attached to its “in” connector.


(1) SIGNAL INPUT
(2) SIGNAL OUTPUT
OUT
OUT
OUT
OUT
OUT
OUT
IN
OUT
OUT
OUT
OUT
OUT
OUT
(1) SIGNAL INPUT

12 port RF Combiner/Splitter


(1) SIGNAL INPUT
(1) SIGNAL INPUT
(1) SIGNAL INPUT
(1) SIGNAL INPUT
(2) SIGNAL OUTPUT

8-port RF Combiner/Splitter

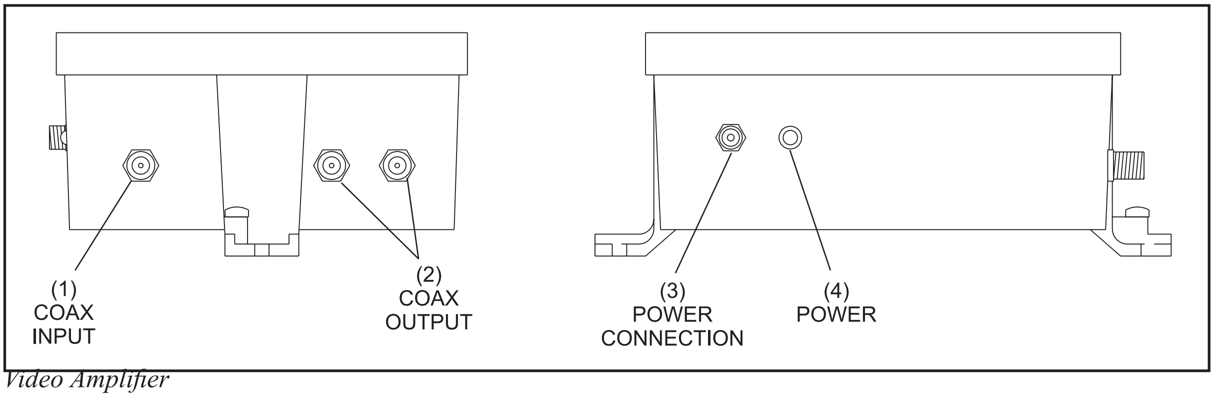
The functions of the connectors on the RF Combiner are:

(1) **Signal Input -** Input connections for the signal coming from the modulators.

(2) **Signal Output -** Connection for the combined signal going to the video amplifier.

Video Amplifier

A video amplifier is used to increase the signal from the RF combiner to a sufficient level for the displays in the center. The unit is specifically designed to amplify higher frequencies more than the lower frequencies to compensate for the greater loss of the higher frequencies as it is sent through the coax cable. The output of the amplifier is pre-adjusted at the factory for a optimum output level.



Video Amplifier

The functions of the components and connectors on the amplifier are:

(1) **Coax Input -** Input connection for the signal coming from the RF combiner.

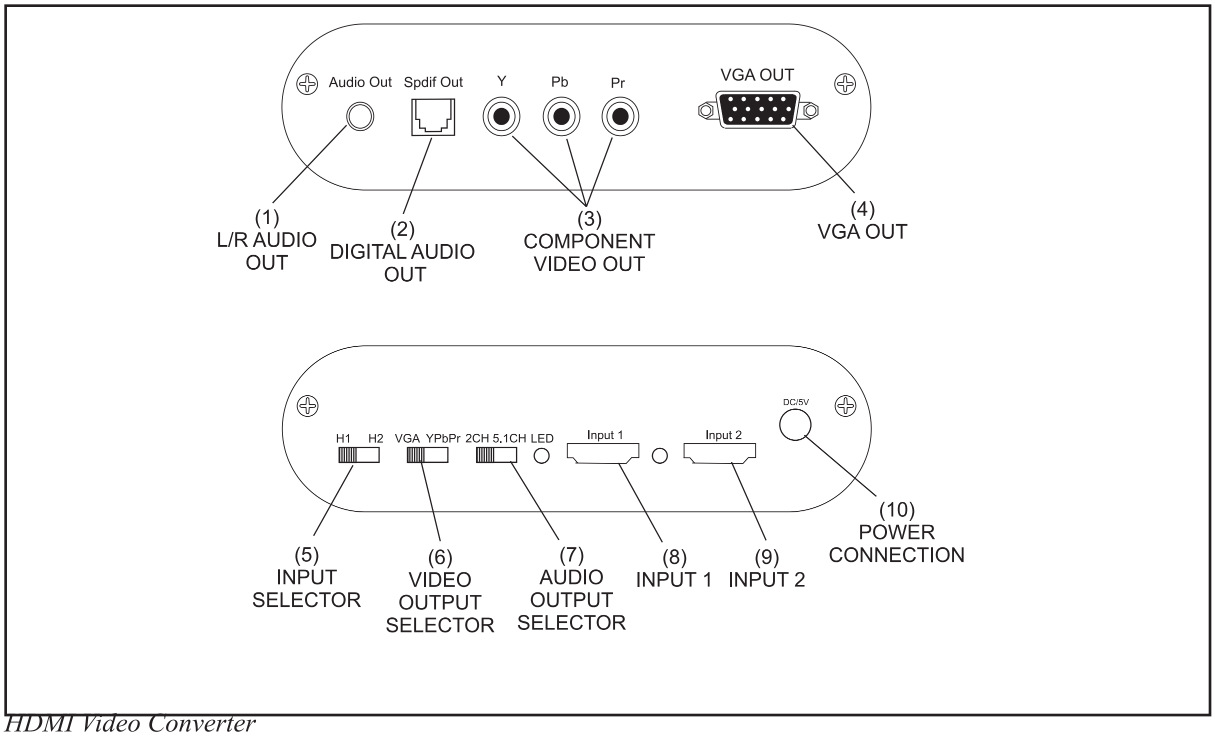
(2) **Coax Output -** Output connection for the amplified signal going to the overhead monitors.

(3) **Power Connection -** 6 VDC power input.

(4) **Power -** Power indicator light.

Video Converters

Video convertors are used, as needed, to convert audio and video signals originating from an A/V source to a format that can be used by the modulators. The need for a convertor is determined by the outputs available from the A/V source and the model of modulator it is connecting to. Convertors are normally needed to convert HDMI signals to component video and in some cases VGA to component video.


Audio Out
Spdif Out
Y
Pb
Pr
VGA OUT
(1) L/R AUDIO OUT
(2) DIGITAL AUDIO OUT
(3) COMPONENT VIDEO OUT
(4) VGA OUT
DC/5V
H1 H2
VGA YPbPr
2CH 5.1CH
LED
Input 1
Input 2
(5) INPUT SELECTOR
(6) VIDEO OUTPUT SELECTOR
(7) AUDIO OUTPUT SELECTOR
(8) INPUT 1
(9) INPUT 2
(10) POWER CONNECTION

HDMI Video Converter

The functions of the components and connectors on the HDMI Video Convertor are:

(1) **L/R Audio Out -** Output connection for audio in the 2 channel stereo analog format.

(2) **SPDIF Out -** Output connection audio in the digital 5.1 format.

(3) **Component Video Out -** Output connector for video converted to the component video format.

(4) **VGA Out -** Output connector for video converted to the VGA format.

(5) **Input Selector -** Switch used to select which HDMI input will be converted.

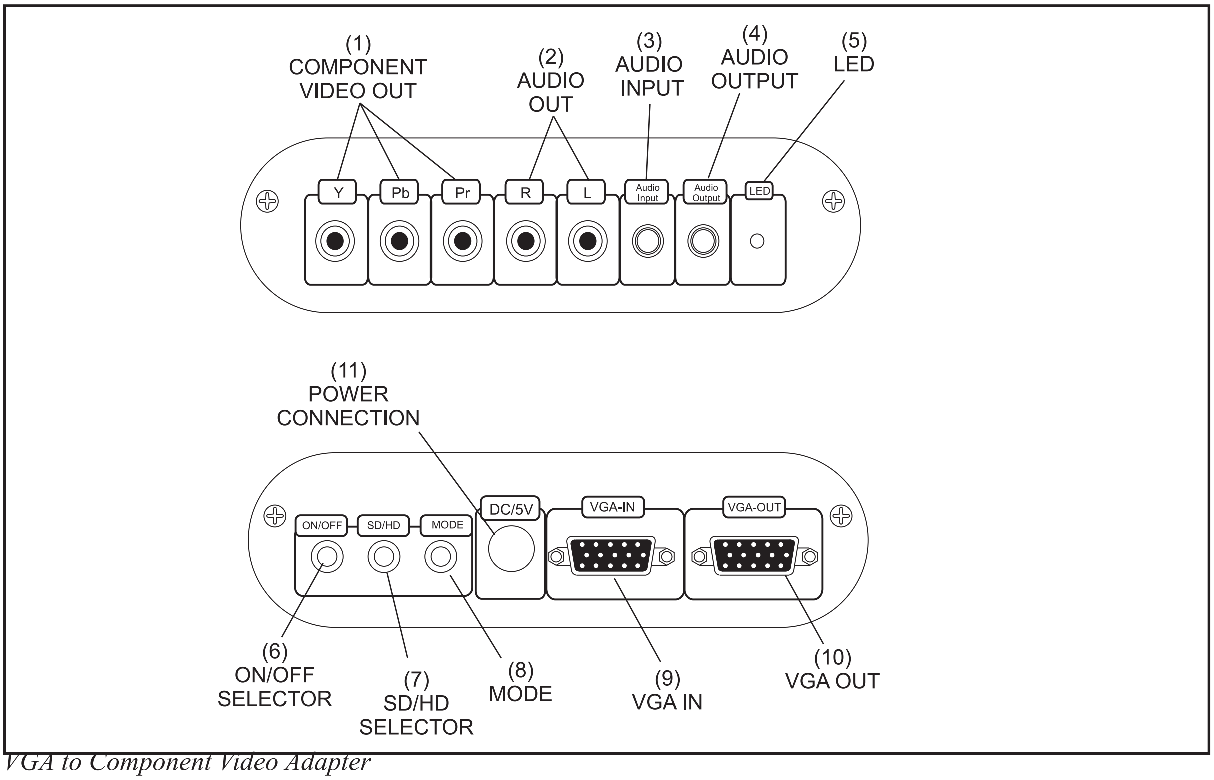
(6) **Video Output Selector -** Switch used to select the format and output connection for the converted video.

(7) **Audio Output Selector -** Switch used to select the format and output connection for the converted audio.

(8) **Input 1 -** HDMI input one.

(9) **Input 2 -** HDMI input two.

(10) **Power Connection -** 5vdc input power connection.


(1)
COMPONENT
VIDEO OUT
(2)
AUDIO
OUT
(3)
AUDIO
INPUT
(4)
AUDIO
OUTPUT
(5)
LED
Y
Pb
Pr
R
L
Audio Input
Audio Output
LED
(11)
POWER
CONNECTION
ON/OFF
SD/HD
MODE
DC/5V
VGA-IN
VGA-OUT
(6)
ON/OFF
SELECTOR
(7)
SD/HD
SELECTOR
(8)
MODE
(9)
VGA IN
(10)
VGA OUT

VGA to Component Video Adapter

The functions of the components and connectors on the VGA to Component Video Convertor are:

(1) **Component Video Out -** Output connector for video converted to the component video format.

(2) **Audio Out -** RCA Type output connections for audio in the 2 channel stereo analog format.

(3) **Audio Input -** Stereo 3.5mm audio input connection for audio associated with the VGA input .

(4) **Audio Output -** Stereo 3.5mm output connections for audio in the 2 channel stereo analog format.

(5) **LED -** Power indicator

(6) **ON/OFF Selector -** Power switch

(7) **SD/HD Selector -** Switch used to select the component video output resolution, 480p, 720p or 1080i.

(8) **Mode -** Switch used to select which the component video output characteristic, Selection modes include normal, vivid, soft, and sharp.

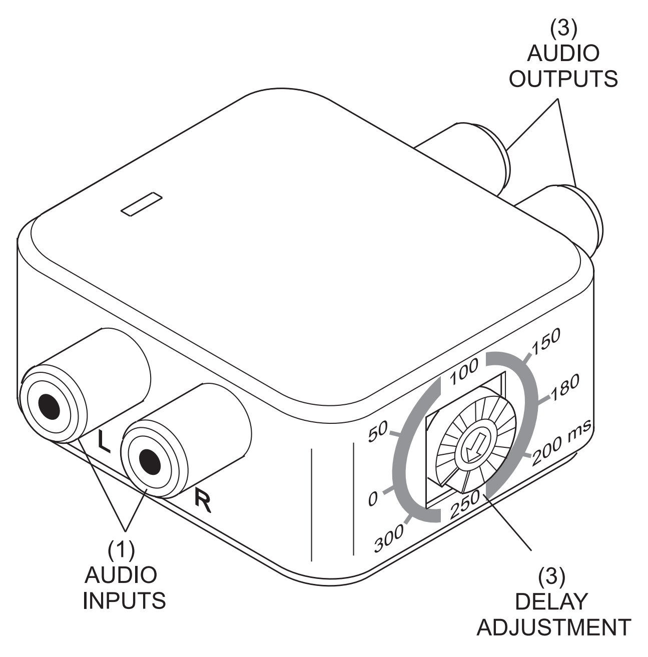
(9) **VGA In -** Input connector for the VGA video to be converted to component video.

(10) **VGA Out -** Output connector used to daisy chain the video entering the unit at the VGA In connector.

(11) **Power Connection -** 5vdc input power connection.

Audio Delay

The audio delay unit is used to correct audio/video timing mismatches that can occur when the audio is processed by an external audio system. In these situations, the audio may be heard through the speakers slightly prior to the video being seen on the display. This results in the two being out of sync. The delay unit provides up to 300 milliseconds of delay for the audio to restore A/V synchronization. Units can be wired in series if addition delay is needed.



Audio Delay

The functions of the components and connectors on the Audio Delay are:

(1) **Audio Inputs -** RCA type connections for the input of left and right channel audio.

(2) **Audio Output -** RCA type connections of the delayed left and right channel audio.

(3) **Delay Adjustment -** Control used to determine the amount of audio delay.

CONTROL DESK SCREENS

Even though desk operations are not within the scope of this manual, certain control desk functions such as configuring the system or downloading information to the scorer computers should be understood by the center mechanic.
The look these screens are dependent on the which control program, Vector or Vector Plus, is installed and the program version being used. For the most up-to-date information refer to the Desk User Guide for the system installed in the center.

VECTOR CONTROL DESK

These following selections can be found on the Settings, Service and File Menus located at the top of the Lane Status screen of the Vector Desk system.

Settings Menu

The "Settings" menu is used to control various system settings. The selections important to the mechanic are Setup and Pin Settings.

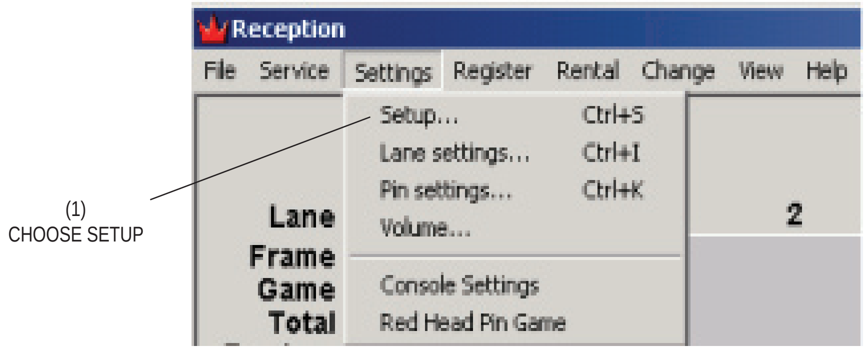
Setup

The "Setup" screen is arranged by functions, such as "Front Desk, Default Rates, Scorer, Print, Prepay, Center Information, Intercom and Service, and Member" tabs. For the center mechanic the Scorer and Intercom and Service tabs are special importance. Refer to the figure titled *Settings Menu.*

To enter the setting page select:

1. Select the "Settings" menu.
2. Select the "Setup" menu item.
3. Enter a password, if required.
4. Select the desired functional tab and make the desired changes.
5. Select the "OK" button.

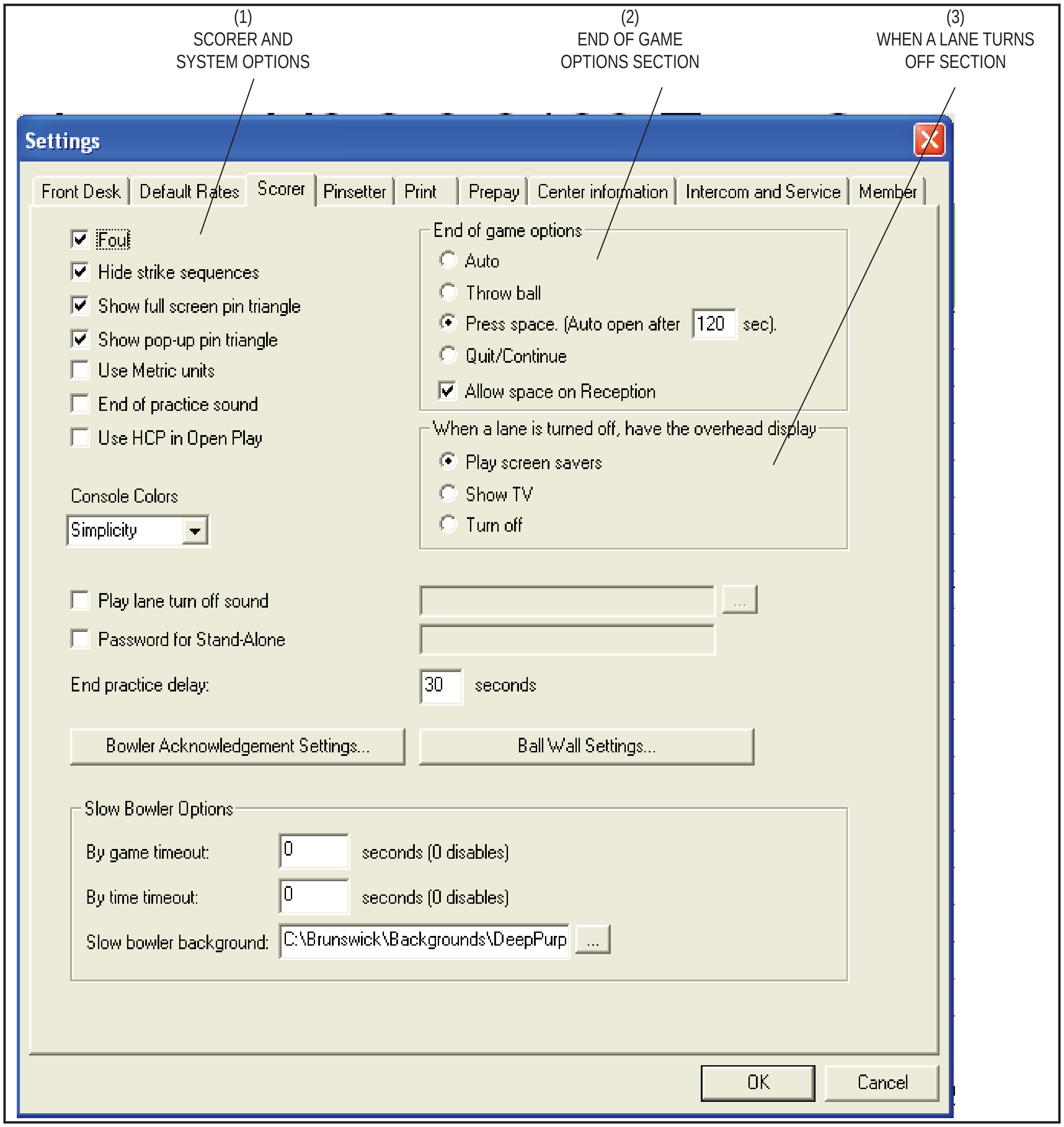
NOTE: *The Vector program will automatically exit and restart when settings have been changed.*


Reception
File
Service
Settings
Register
Rental
Change
View
Help
Setup... Ctrl+S
Lane settings... Ctrl+I
Pin settings... Ctrl+K
Volume...
Console Settings
Red Head Pin Game
Lane
Frame
Game
Total
2
(1)
CHOOSE SETUP

Settings Menu.

(1) CHOOSE SETUP

Scorer Tab


(1)
SCORER AND SYSTEM OPTIONS
(2)
END OF GAME OPTIONS SECTION
(3)
WHEN A LANE TURNS OFF SECTION
Settings
Front Desk
Default Rates
Scorer
Pinsetter
Print
Prepay
Center information
Intercom and Service
Member
...
Bowler Acknowledgement Settings...
Ball Wall Settings...
OK
Cancel

☑ Foul
☑ Hide strike sequences
☑ Show full screen pin triangle
☑ Show pop-up pin triangle
☐ Use Metric units
☐ End of practice sound
☐ Use HCP in Open Play

Console Colors: Simplicity

End of game options
○ Auto
○ Throw ball
● Press space. (Auto open after 120 sec).
○ Quit/Continue
☑ Allow space on Reception

When a lane is turned off, have the overhead display
● Play screen savers
○ Show TV
○ Turn off

☐ Play lane turn off sound
☐ Password for Stand-Alone

End practice delay: 30 seconds

Slow Bowler Options
By game timeout: 0 seconds (0 disables)
By time timeout: 0 seconds (0 disables)
Slow bowler background: C:\Brunswick\Backgrounds\DeepPurp

Scorer Tab

(1) SCORER AND SYSTEM OPTIONS (2) END OF GAME OPTIONS SECTION (3) WHEN A LANE TURNS OFF SECTION

Scorer and System Options

This section controls the following scorer and system options:

Foul - Determines if the scorer will score an “F” when if the foul sensor is tripped.

Hide Strike Sequences - This option controls whether or not the scorer will display the running score for strings of strikes. If this option is selected, the scorer will not show the score for a string of strikes until the string ends. If this option is not selected the scorer will immediately display the running score during a string of strikes.

Show Full Screen Pin Triangle - This option controls whether or not the “Full Screen Pin Triangle” will be displayed after the first ball of a frame when pins were left standing. This display completely obscures the scoresheet for a short period of time. The benefit to this display is that there is a place to display a small advertising message. There can be an unlimited number of advertising messages displayed on the full screen pin triangle. They are stored in the C:\Brunswick\Media\Commercial\Thumbnail directory. The advertising graphics must be 260 pixels wide, 70 pixels tall and 256 colors. The graphics must have a .bmp extension, but there is no other naming convention. This option can be used in conjunction with the “Pop Up Pin Triangle” Option.

Show Pop Up Pin Triangle - This option controls whether or not the pop-up pin triangle will be displayed after the first ball of a frame when pins were left standing. This display is slightly less than one quarter of the screen, and moves around the screen so that the current score is usually visible. This display is not removed until the second ball is thrown. This option can be used in conjunction with the “Full Screen Pin Triangle” option.

Use Metric Units - This option controls whether the system will display ball speed in Miles Per Hour (MPH) or Kilometers Per Hour (KPH) on the scoresheet. This also controls which whether MPH or KPH is entered in the “Speed Limit” field of the “Machine” section.

End of Practice Sound - This option controls whether or not the a sound will play when practice time expires.

Use HCP in Open Play - This option allows the use of handicaps during open play bowling.

Play Lane Turn Off Sound - This option controls whether or not the front desk system will play a sound when a lane is turned off. This alerts the desk employee when a lane is turned off. In the field to the right of the checkbox enter or navigate to the .WAV file that should be played when a lane is turned off.

Stand Alone Password - This option controls whether or not the scorer will ask for a password when in stand-alone mode. If the password field is blank the bowler will NOT be prompted for a password when using the console in stand alone mode.

End Of Game Options Section

This section controls what the scorer will do when a game of bowling is completed, and how it will interact with the bowler to start the next game. The following options are available:

Auto - This option will automatically clear the score sheet and start the next game after a brief delay. No bowler interaction is necessary.

Throw Ball - This option will automatically clear the score sheet and start the next game only after the bowler throws the first ball for the next game.

Press Space - This option will prompt the bowler to press the space key on the keyboard or LCD Touch Screen. If the bowler does not press the space key within the number of seconds entered in the field, the system will automatically clear the score sheet and start the next game.

Quit/Continue - This option will ask the bowler whether or not they wish to continue bowling. If they select quit, the lane will turn off. If they select continue the system will automatically clear the score sheet and start the next game.

When A Lane Is Turned Off Section

This section controls what will be displayed on the overhead monitors after the lane is turned off. The following two options are available:

Screen Savers - When this option is selected the system will display the advertising graphics as screen savers. The advertising graphics are stored in the C:\Brunswick\Media\Commercial directory. Advertising graphics must be properly named. The naming convention used by the system is: PauseX.EXT where X equals a sequential number starting with one. The EXT is the extension from one of the supported file formats. There are three possible advertising graphic file formats. The system supports the following formats:

Windows Bitmap (.BMP) - 1920 x 1080, 32 bit color.

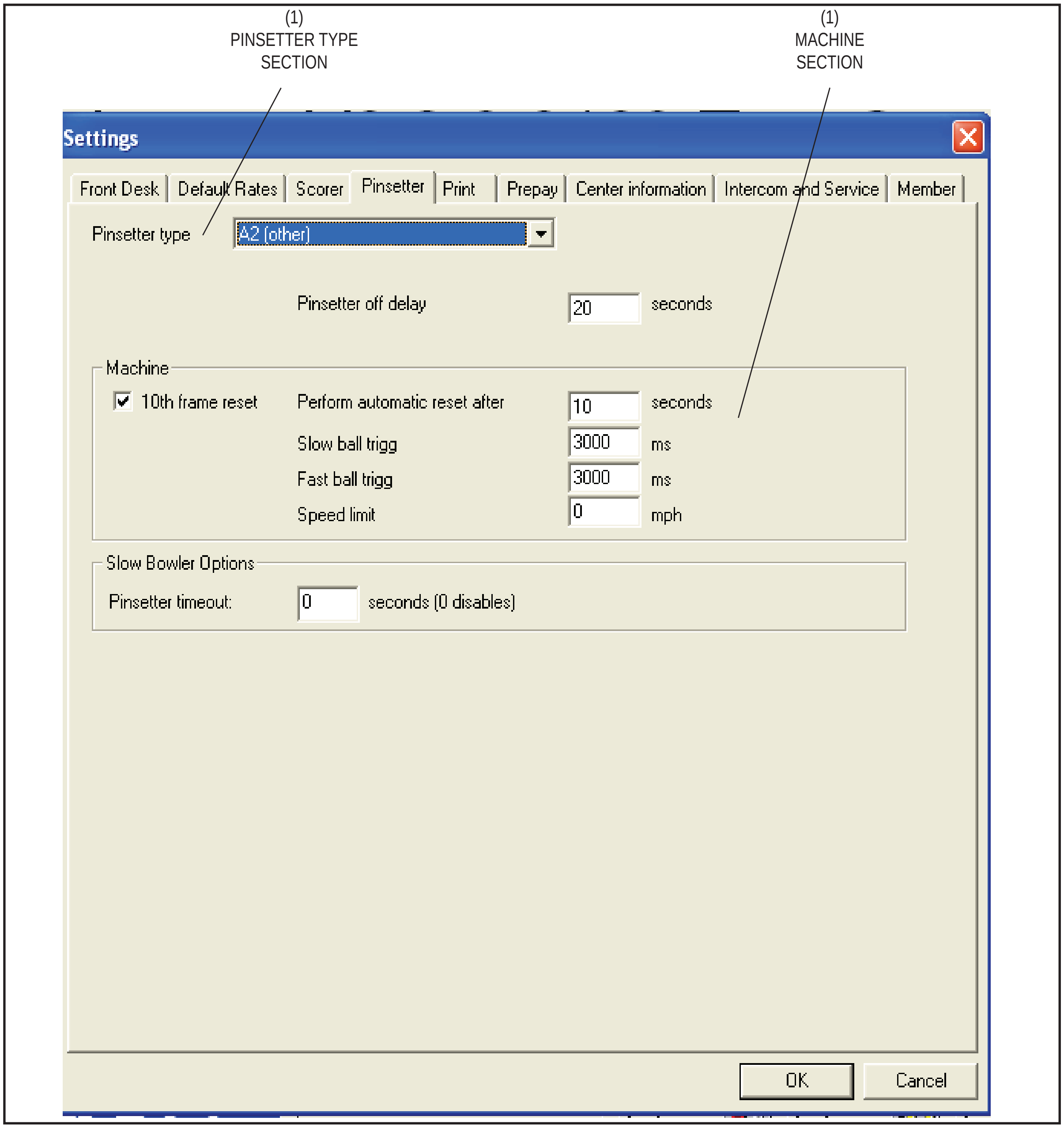
Vector Slideshow (.DLT) - This format is a special format that combines a series of bitmap graphics into a animated show. Use the BMP2DLT.exe converter found in the C:\Brunswick\Utility directory to convert bitmap graphics into Vector Animations.

MPEG (.MPG) - This format is digital video and usually comes from a source such as a video camera. The system supports MPEG1.

TV - When this option is selected the system will switch the overhead monitors to the tuner input when lanes are turned off.

Turn Off - When this option is selected the system will turn the overhead monitors “off” when the lanes are turned off.

Pinsetter Tab


(1)
PINSETTER TYPE
SECTION
(1)
MACHINE
SECTION
Settings
Front Desk
Default Rates
Scorer
Pinsetter
Print
Prepay
Center information
Intercom and Service
Member
OK
Cancel

Pinsetter type: A2 (other)

Pinsetter off delay: 20 seconds

Machine

☑ 10th frame reset

Perform automatic reset after: 10 seconds

Slow ball trigg: 3000 ms

Fast ball trigg: 3000 ms

Speed limit: 0 mph

Slow Bowler Options

Pinsetter timeout: 0 seconds (0 disables)

Pinsetter Tab

(1) PINSETTER TYPE SECTION (2) MACHINE SECTION

Pinsetter Type Section

Use the drop down box to select the type of pinsetter installed in the center.

The *Pinsetter off delay* determines how long the pinsetter and its ball return system will remain on after bowling has be completed so that the ball can return to the bowler.

Machine Section
The machine section is available whenever a non GS pinsetter type is selected.

The “10th Frame Reset” checkbox controls whether the scorer will recycle the pinsetter when there are standing pins after the third ball in the tenth frame. The pinsetter will cycle automatically using the reset button, and the machine will complete a non-scoring second ball cycle. The “seconds” field to the right of the “10th Frame Reset” checkbox controls how long the scorer should wait after the ball is detected, before the machine is triggered. This setting must allow for the machine to complete the previous cycle. If the machine is triggered while it is still in motion from the previous cycle, the machine will ignore the trigger, and it will appear that the machine is not resetting automatically. In some situations it may cause the machine to stop in mid cycle. If the delay is set too long the machine may cycle when a bowler isn’t expecting it, especially if they manually triggered the machine while waiting for the automatic trigger.

***NOTE:** A good starting value for “10th Frame Reset” is 10 seconds.*

The “Slow Ball Trigg” field is used for installations with pin cameras to set the amount of time the Distribution board will wait before automatically triggering the pinsetter when a slow moving ball is detected. The system determines if a ball is moving slow based on the value set in the “Speed Limit” field. If the calculated ball speed is below the value set in the “Speed Limit” field, the system uses the “Slow Ball Trigg” value. When the ball speed is higher than the value set in the “Speed Limit” field, the system uses the “Fast Ball Trigg” value. This value should be high enough to allow for the machine to trigger on its own but not so high that the bowler has to wait for the machine to trigger.

***NOTE:** A good starting value for the “Slow Ball Trigg” is 4500 ms.*

The “Fast Ball Trigg” field is used for installations with pin cameras to set the amount of time the Distribution board will wait before automatically triggering the pinsetter when a fast moving ball is detected. The system determines if a ball is moving fast based on the value set in the “Speed Limit” field. If the calculated ball speed is above the value set in the “Speed Limit” field, the system uses the “Fast Ball Trigg” value. When the ball speed is higher than the value set in the “Speed Limit” field, the system uses the “Fast Ball Trigg” This value should be high enough to allow for the machine to trigger on its own but not so high that the bowler has to wait for the machine to trigger.

***NOTE:** A good starting value for “Fast Ball Trigg” is 2000 ms.*

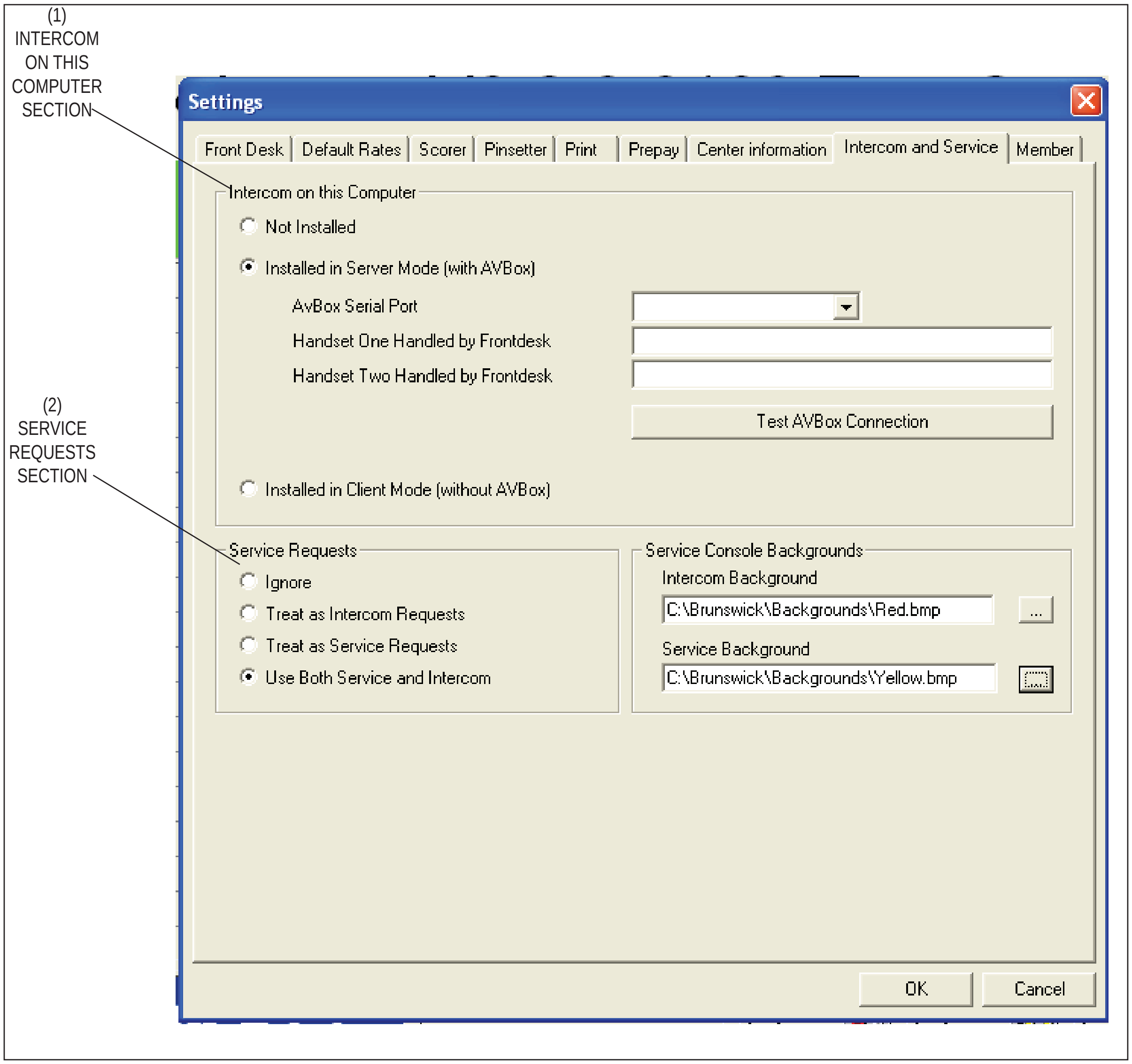
The “Speed Limit” field is used to set the threshold that determines whether a ball is considered to be moving “Slow” or “Fast”. This is used in conjunction with the “Fast Ball Trigg” or “Slow Ball Trigg” values to determine how long the distribution board will wait before it will automatically trigger the pinsetter.

***NOTE:** A good starting value for “Speed Limit” is 7.*

The “Pinsetter Off Delay” field is used to control how many seconds the pinsetter remains on after prepaid bowling has expired. This value should be set so that bowlers do not think that they can take extra shots, yet allows the pinsetter to remain on long enough for bowling balls to return all the way through the ball lift.

***NOTE:** A good starting value for “Pinsetter Off Delay” is 45 seconds.*

Intercom And Service Tab


(1)
INTERCOM
ON THIS
COMPUTER
SECTION
(2)
SERVICE
REQUESTS
SECTION
Settings
Front Desk
Default Rates
Scorer
Pinsetter
Print
Prepay
Center information
Intercom and Service
Member
Test AVBox Connection
...
OK
Cancel

Intercom on this Computer

○ Not Installed

● Installed in Server Mode (with AVBox)

AvBox Serial Port

Handset One Handled by Frontdesk

Handset Two Handled by Frontdesk

○ Installed in Client Mode (without AVBox)

Service Requests

○ Ignore

○ Treat as Intercom Requests

○ Treat as Service Requests

● Use Both Service and Intercom

Service Console Backgrounds

Intercom Background: C:\Brunswick\Backgrounds\Red.bmp

Service Background: C:\Brunswick\Backgrounds\Yellow.bmp

Intercom and Service Tab

(1) INTERCOM ON THIS COMPUTER SECTION

(2) SERVICE REQUESTS SECTION

Intercom on this Computer Section

This section controls the setup of the intercom. The following options are available:

Not Installed - When this option is selected, the system has no intercom installed.

Server Mode - When this option is selected, the Audio/Video (A/V) box is connected to this computer. The port where the A/V box is connected must be selected using the drop down menu. The “Handset One” field tells the system which front desk computer will answer the intercom connected to the “Handset One” jack on the A/V box. The “Handset Two” field tells the system which front desk computer will answer the intercom connected to the “Handset Two” jack on the A/V box. The “Test A/V Box Connection” button can be used to test the serial port connection between the computer and the A/V box.

Client Mode - When this option is selected, the A/V box is connected to a different computer on the network.

Service Requests Section

This section controls the function of the “Service” button on the scorer console. The following options are available:

Ignore - When this option is selected the service button at the scorer will be ignored.

Intercom - When this option is selected, the service button at the scorer will place an intercom request in the queue at the front desk and change the background of the scoresheet to the selected service graphic.

Service - When this option is selected, the service button at the scorer will change the background of the scoresheet to the selected service graphic. When this option is selected, intercom calls cannot be made to the front desk. This option is normally used for centers that have waitstaff attending the lanes.

Both - When this option is selected the bowler will get an option of selecting either intercom or service (waitstaff) when they select the service button at the scorer. The background of the scoresheet will change to the service or intercom graphic as appropriate.

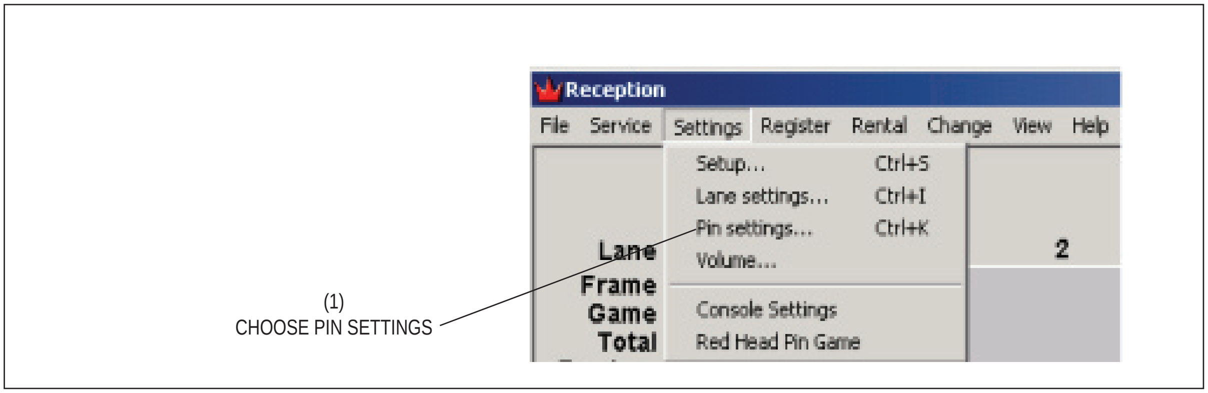
Pinsettings

The “Pinsetting” function is used to control the operation of the Pinfall Camera. The Pinfall Camera takes a picture of the standing pins that is used to calculate the score. The camera settings are very important for proper operation of the scoring system. The score for each ball is determined by comparing the light level within a target with a threshold value. If the light level inside the target is higher than the threshold value, the scorer will determine the pin is standing. If the light level inside the target is lower than the threshold value, the scorer will determine the pin has fallen and score it as pinfall. The system has two light thresholds. One that is set up for normal operation and one that is set up for operation in low light conditions such as black lights, or times when lights over the bowling lanes are turned off. Refer to the figures titled *Pinsetting Menu* and *Pinsetting Window.*

To enter the setting page select:

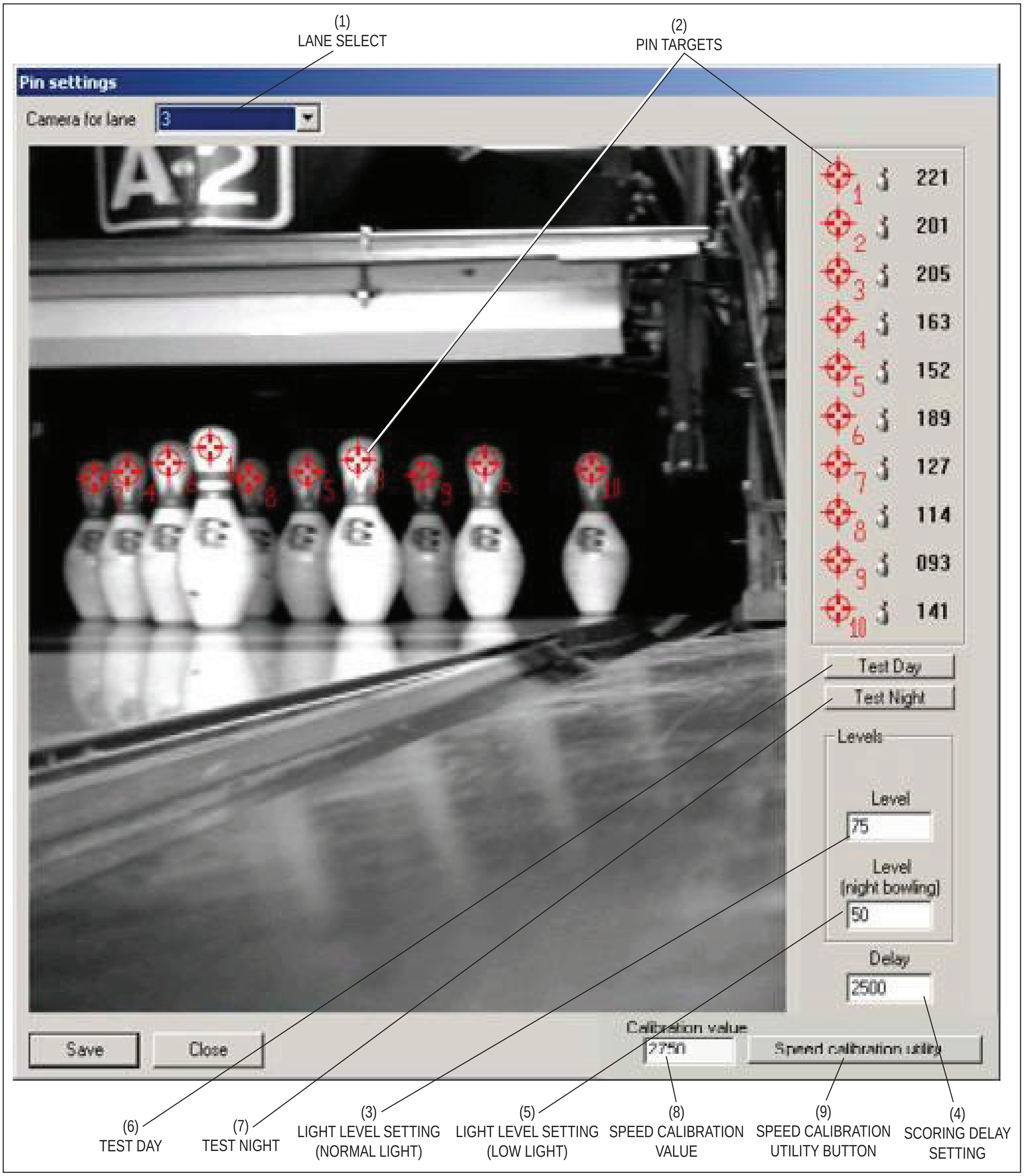
1. Select the “Settings” menu.
2. Select the “Pin settings” menu item.
3. Enter a password, if required.
4. Make desired changes.
5. Select the “OK” button.

NOTE: *The Vector program will automatically exit and restart when settings have been changed.*


Reception
File
Service
Settings
Register
Rental
Change
View
Help
Setup... Ctrl+S
Lane settings... Ctrl+I
Pin settings... Ctrl+K
Volume...
Console Settings
Red Head Pin Game
Lane
Frame
Game
Total
2
(1)
CHOOSE PIN SETTINGS

Pinsetting Menu.

(1) CHOOSE PIN SETTINGS



Pin settings

Camera for lane: 3

1	221
2	201
3	205
4	163
5	152
6	189
7	127
8	114
9	093
10	141

Levels

Level: 75

Level (night bowling): 50

Delay: 2500

Calibration value: 2750

(1)
LANE SELECT
(2)
PIN TARGETS
A-2
Test Day
Test Night
Save
Close
Speed calibration utility
(6)
TEST DAY
(7)
TEST NIGHT
(3)
LIGHT LEVEL SETTING
(NORMAL LIGHT)
(5)
LIGHT LEVEL SETTING
(LOW LIGHT)
(8)
SPEED CALIBRATION
VALUE
(9)
SPEED CALIBRATION
UTILITY BUTTON
(4)
SCORING DELAY
SETTING

Pin Settings Window

(1) **Lane Select -** Drop down box used to select the lane for calibration.

(2) **Pin Targets -** The area where the camera looks to determine whether or not that pin is standing. Targets are positioned by dragging them from the target area and placing them over the proper pins. Once in position the light level (0 - 255) coming from the pin will be shown in target area.

(3) **Light Level Setting (Normal Light) -** Setting used to determine the minimum light level needed to detect a pin as standing during normal bowling conditions. *A good rule of thumb is to select a value midpoint between the level of light shown for the darkest pin and the level displayed when a target is positioned on the background.* Normally the preset level will be in the 80 to 100 range, but if the lighting is dimmer or brighter than normal, it may fall outside these values.

The **Level** should be set to a substantially lower value than the light level lowest level pin. Two camera pictures of the same lane, taken immediately after each other, can have different light levels. For this reason it is a good idea to take several pictures in order to see how much the light can vary. Also remember that during bowling, the camera pictures are taken when the sweep is down. This results in pictures that are somewhat darker than the pictures used during setup. It is important to allow for this when setting the levels.

(4) **Scoring Delay -** The “Delay” time, in milliseconds, controls when the scoring picture is taken. The time starts once the rake/sweep has left the home position and the its switch has opened. This value should be set to allow the rake/sweep to drop to the guard position before the picture is taken. The delay should not be so long that the desk/table can make contact with the top of the pins. If the interval is too short it may include pins just about to fall or the sweep board may block the camera from seeing the pins. If the delay is too long, the pinsetter deck or table may block the pins.

NOTE: *1500-3000 milliseconds is a typical setting for most pinsetters.*

(5) **Light Level Setting (Low Light) -** An alternative light level setting that can be used to determine the minimum light level needed to detect a pin as standing. This is usually used to set a threshold for use during Cosmic or other low light situations. Use the selection located on the Lane Setting screen to determine which light level will be used.

(6) **Test Day -** Click this button to simulate how the camera will score when using the light level value entered in the Level box.

(7) **Test Night -** Click this button to simulate how the camera will score when using the light level value entered in the Level (Night Bowling) box.

(8) **Speed Calibration Value -** Enter a new value in this box to change the ball speed calculation. Increasing the value cause an increase in the ball speed shown on the overhead. Lower this value decreased the speed shown.

(9) **Speed Calibration Utility Button -** Click this button to run the ball speed calibration wizard.

Camera Calibration

To calibrate the camera, the pinsetter associated with the camera must be on with 10 pins standing on the pindeck. Perform the following steps to calibrate the camera to the pins:

1. Select the lane to be calibrated.

2. Using the mouse, drag the target for the Pin 1 from the column at the right side of the dialog box to the head of the pin 1. The number in the column on the right indicates the light level for that pin.

3. Repeat the previous step for all pins.

NOTE: *It is important to place the correct pin target on its corresponding pin; if not, incorrect scoring will occur.*

4. Set the *initial* Light Threshold:

   a. Record the light value for all ten pins.
   b. Knock all ten pins over and record the light value for each pin.
   c. Select the “Level” field and enter a value midway between the lowest light level value recorded in *step a* and the light highest level recorded in *step b*.

NOTE: *The initial light level setting described is a good starting point for camera calibration. The actual light level used may be varied from this setting to accommodate different lighting and pin conditions, such as colored pins.*

5. Set the *initial* Night Light Threshold:

   a. Set the bowling center’s lighting up as it would be used during night bowling events such as cosmic bowling, black light bowling or other reduced lighting conditions.
   b. Record the light value for all ten pins.
   c. Knock all ten pins over and record the light value for each pin.
   d. Select the “Level” field and enter a value midway between the lowest light level value recorded in *step b* and the light highest level recorded in *step c*.

6. Set the Delay value:

   a. Select the delay field.
   b. Enter the amount of delay between the time that the rake or sweep is triggered and when the camera should take the picture for scoring. This value should be set to allow the rake/sweep to drop to the guard position before the picture is taken. The delay should end before the rack/table begins to move. 1500-3000 milliseconds is a typical setting for most pinsetters.

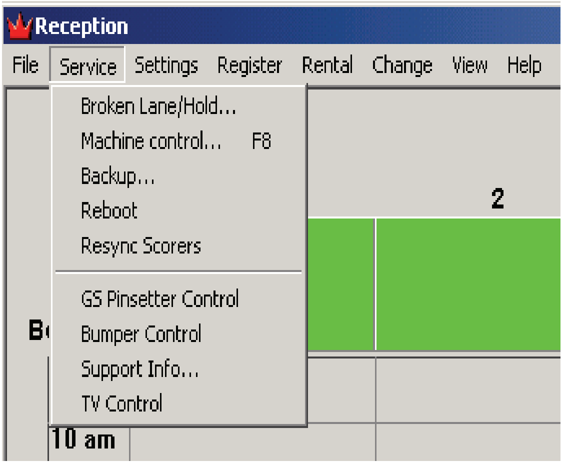
7. When all camera settings have been made for this lane, select the “Save” button.

Service Menu

The "Service" menu is used to control various pinsetter functions. The selections important to the mechanic are Broken Lane/Hold , Machine Control, and GS Pinsetter Control. Refer to the figure titled *Service Menu.*

To enter a service menu screen select:

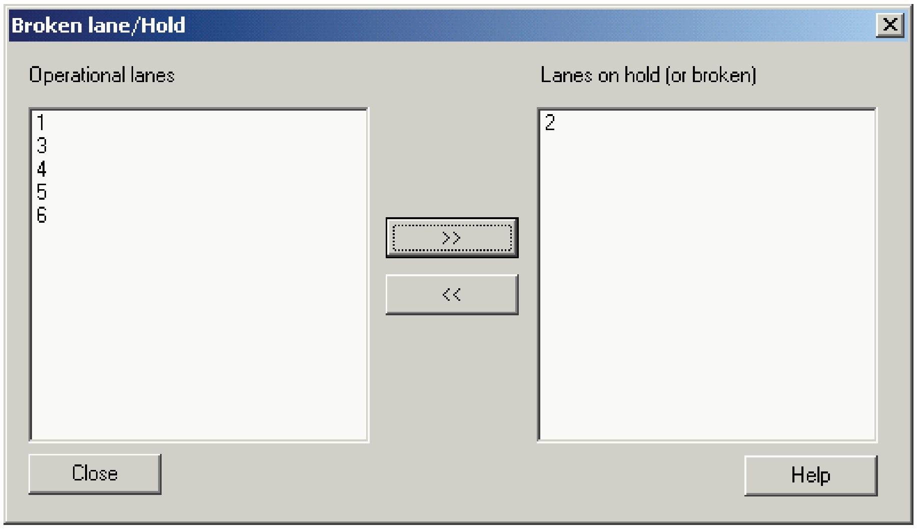
1. Select the "Service" menu.
2. Select the desired menu item.
3. Enter a password, if required.
4. Make desired changes.
5. Select the "OK" button.


Reception
File
Service
Settings
Register
Rental
Change
View
Help
Broken Lane/Hold...
Machine control... F8
Backup...
Reboot
Resync Scorers
GS Pinsetter Control
Bumper Control
Support Info...
TV Control
2
10 am

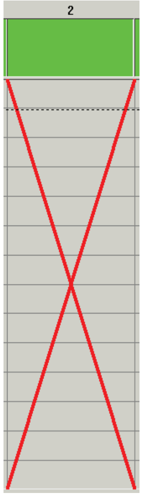
Service Menu

Broken Lane/Hold

This function is used to indicate that lanes are out of service or to place a lane that is currently issued to a customer on hold. When a time bowling lane is placed on hold, the amount of time that the lane is on hold is subtracted from the total amount due. Lanes that are broken or on hold will be displayed on the main lane status page with a large red letter X through the lane column. Refer to the figures titled *Broken Lane/Hold Window* and *Out Of Service Lane Indication*.


Broken lane/Hold
Operational lanes
Lanes on hold (or broken)
1
3
4
5
6
>>
<<
2
Close
Help

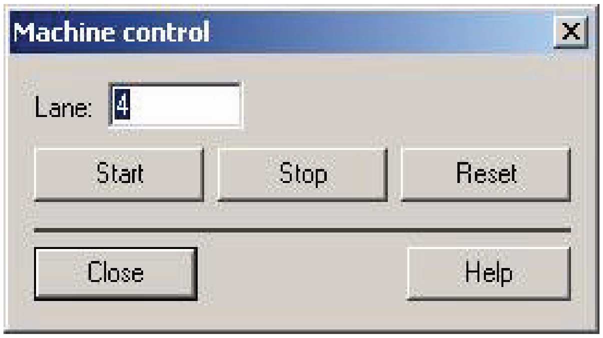
Broken Lane/Hold Window



Out Of Service Lane Indication

Machine Control

This function is used to control the pinsetters without issuing the lanes. Common uses include turning on machines to set pin fall cameras, resetting pins after conditioning the lanes and turning lanes of for maintenance procedures. Machine control functions can also be used on lanes that are issued. Refer to the figure titled *Machine Control Window.*



Machine control
X
Start
Stop
Reset
Close
Help

Lane: 4

Machine Control Window

(1) **Lane -** Select which lanes will be affected.

(2) **Start -** The "Start" button is used to turn on the pinsetters on the selected lanes.

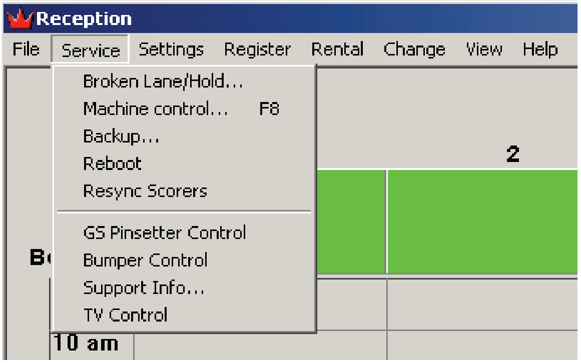
(3) **Stop -** The "Stop" button is used to turn off the pinsetters on the selected lanes.

(4) **Reset -** The "Reset" button is used to cycle the pinsetters on the selected lanes. The reset function is the same as the reset button found on the ball return.

Reboot/Shutdown/Wake-Up

The Reboot function allows the user to reboot, turn off, or turn on Scorer Computers, client computers, and Display Controllers from the control desk. It is suggested that the reboot procedure be done daily as a general maintenance procedure. To reboot, shutdown, or Wake-up (turn on) one or all of the units use the following procedure. Refer to figure titled *Reboot, Shutdown, Wake-up.*

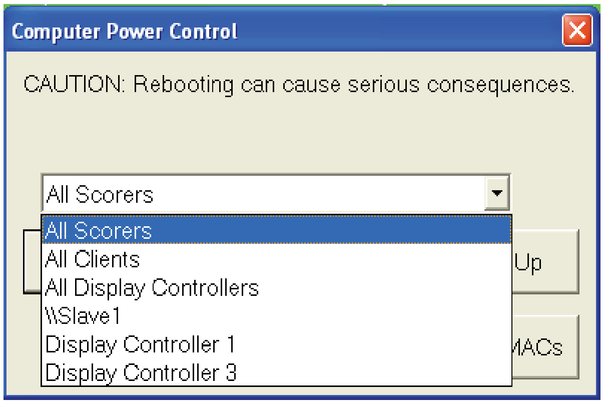
1. From within the Vector program running on the Front Desk Server, select the "Service" menu.



Reception
File
Service
Settings
Register
Rental
Change
View
Help
Broken Lane/Hold...
Machine control... F8
Backup...
Reboot
Resync Scorers
GS Pinsetter Control
Bumper Control
Support Info...
TV Control
2
B
10 am

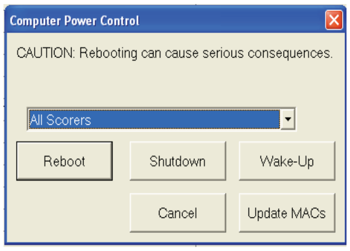
2. Select the "Reboot" menu item.

3. Using the drop down arrow, select the desired units. Select “All” or select the individual device if you only want to reboot only one of them.


Computer Power Control
All Scorers
All Scorers
All Clients
All Display Controllers
\\Slave1
Display Controller 1
Display Controller 3
Up
MACs

CAUTION: Rebooting can cause serious consequences.

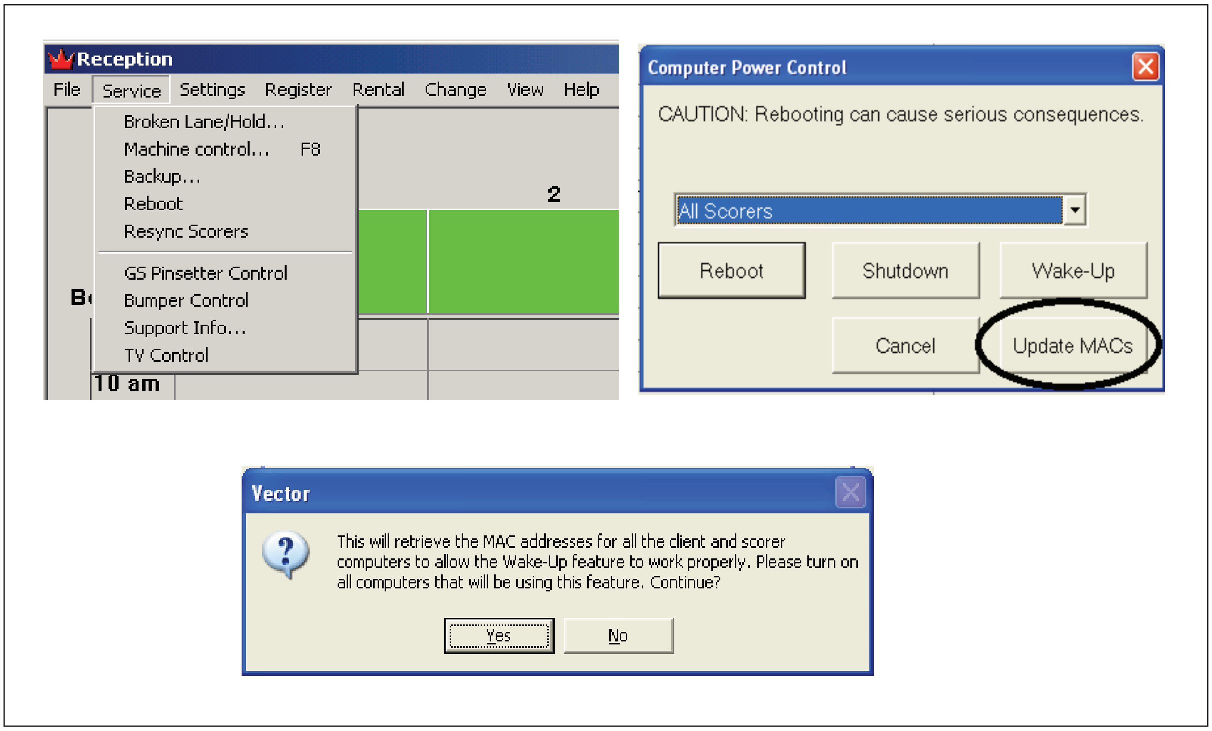
4. Select the “Reboot”, “Shutdown”, or “Wake-up”, button as desired.


Computer Power Control
All Scorers
Reboot
Shutdown
Wake-Up
Cancel
Update MACs

CAUTION: Rebooting can cause serious consequences.

Reboot, Shutdown, Wake-up

NOTE: *In order for the Wake-up function to work properly, the MAC addresses of the units must be known. This is done by using the Update MACs button on the Computer Power Control screen.*


Reception
File
Service
Settings
Register
Rental
Change
View
Help
Broken Lane/Hold...
Machine control... F8
Backup...
Reboot
Resync Scorers
GS Pinsetter Control
Bumper Control
Support Info...
TV Control
2
10 am
Computer Power Control
All Scorers
Reboot
Shutdown
Wake-Up
Cancel
Update MACs
Vector
Yes
No

CAUTION: Rebooting can cause serious consequences.

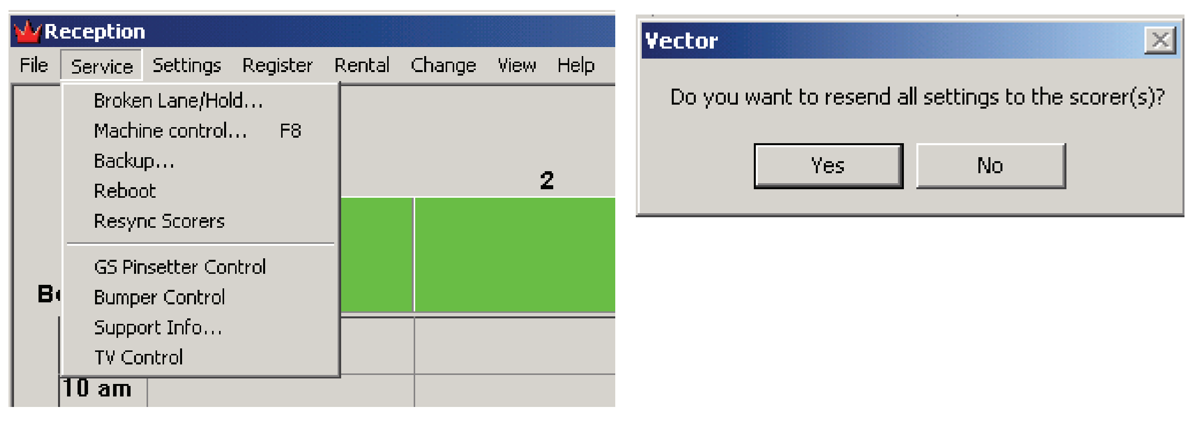
This will retrieve the MAC addresses for all the client and scorer computers to allow the Wake-Up feature to work properly. Please turn on all computers that will be using this feature. Continue?

Update MACs

ReSync Scorers

This function is only available in Vector Version 3.02 and later. It allows the user to send configuration information to the Scorer Computers with the click of a button rather than having to refresh each of the configuration screens at the control desk. To perform a resync procedure do the following:

1. From within the Vector program running on the Front Desk Server, select the “Service” menu.
2. Select the “Resync Scorers” menu item.
3. Select the “Yes” button to resync the scoring computers. Refer to the figure titled **Resync Scorers.**

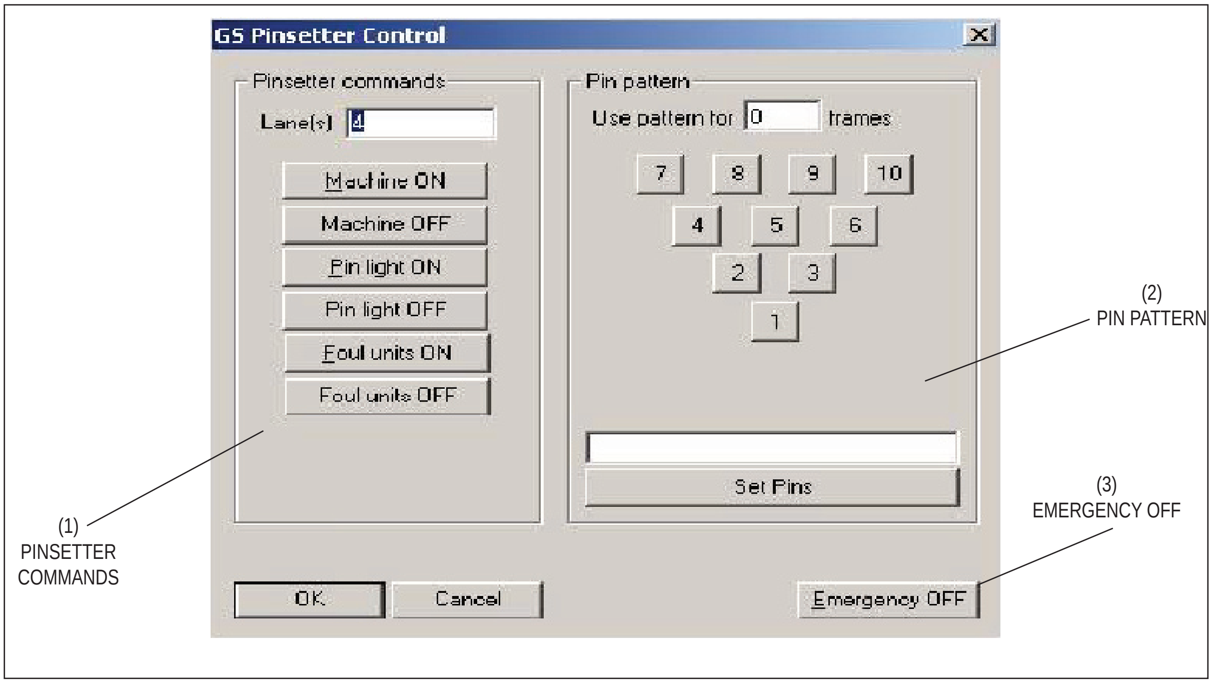

Reception
File
Service
Settings
Register
Rental
Change
View
Help
Broken Lane/Hold...
Machine control... F8
Backup...
Reboot
Resync Scorers
GS Pinsetter Control
Bumper Control
Support Info...
TV Control
2
10 am
Vector
Yes
No

Do you want to resend all settings to the scorer(s)?

Resync Scorers

GS Pinsetter Control

This function is used to control GS pinsetters without issuing the lanes. Common uses include turning on machines, spotting specific pins and turning lanes of for maintenance procedures. Refer to the figures titled *GS Pinsetter Control Window.*


GS Pinsetter Control
Pinsetter commands
Machine ON
Machine OFF
Pin light ON
Pin light OFF
Foul units ON
Foul units OFF
Pin pattern
7
8
9
10
4
5
6
2
3
1
Set Pins
OK
Cancel
Emergency OFF
(1)
PINSETTER
COMMANDS
(2)
PIN PATTERN
(3)
EMERGENCY OFF

Lane(s) 4

Use pattern for 0 frames

GS Pinsetter Control Window

Pinsetter Commands Section
This section is used to send commands to the GS pinsetter. The following commands are available:

Machine On - This command will turn on the pinsetter for the selected lane or lane range.

Machine Off - This command will turn off the pinsetter for the selected lane or lane range.

WARNING! Turning off GS pinsetters in this manner is not to be used in an emergency. The pinsetter will complete it's current cycle prior to turning off. If a pinsetter must be shut off in an emergency, then use the "Emergency Off" button.

Pin Light On - This command will turn on the pin deck lamp only for the selected lane or lane range.

Pin Light Off - This command will turn off the pin deck lamp only for the selected lane or lane range.

Foul Units On *- This command will turn on the foul units for the selected lane or lane range.

Foul Units Off * - This command will turn off the foul units for the selected lane or lane range.

** Foul unit control is only available in centers that have upgraded to Vector from BowlerVision or BowlerVision II.*

Pin Pattern Section

This section is used to control which pins the pinsetter spots. Typically this function is used to respot pins during competition. Any pin combination can be set on any lane from the front desk. This section can also be used to set up spare practice, by entering a number of frames other than zero in the “User Pattern for x Frames” field. For example, of 8 is entered in the field, whatever pin combination is selected will be set for eight consecutive frames. Pin selection can be made by pressing the button for a pin or by entering the pin number in the field at the bottom of this section. The “Set Pins” button causes the system to set the specified pins for the desired number of frames.

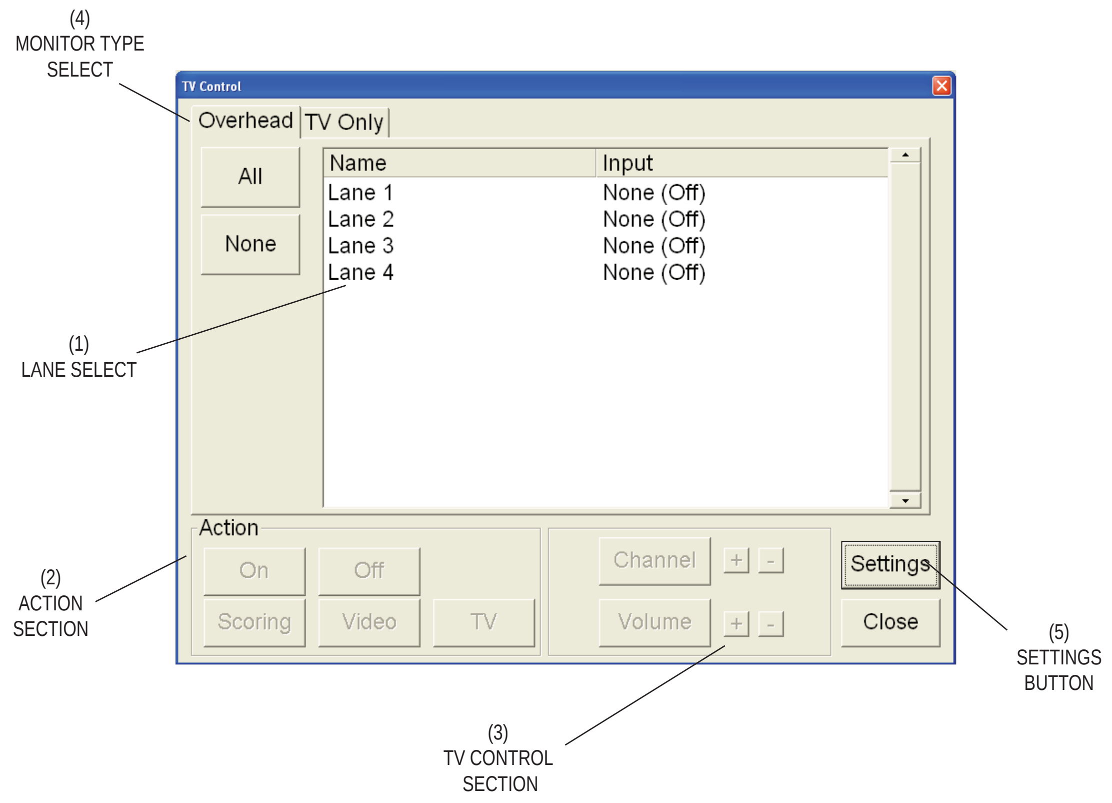
TV Control

The TV Control function is used to change the video display of the overhead monitors between the TV video signal provided by an A/V source such as a VCR or the scoresheet information from the scorer computer. The control can be used to turn the monitors off when not in use
Additionally, some centers may be equipped with overhead monitors that are used only for video display. These monitors may be placed in between the scoresheet monitors of a lane pair, or they may be placed between some or all lane pairs. The TV Control function is used to configure these monitors and to turn these monitors on and off. Refer to the figure titled **TV Control.**

To enter the TV control screen do the following:

1. From within the Vector program running on the Front Desk Server, select the “Service” menu.

2. Select “TV Control” from the drop down menu.


(4)
MONITOR TYPE
SELECT
TV Control
Overhead
TV Only
All
None
(1)
LANE SELECT
Action
(2)
ACTION
SECTION
On
Off
Scoring
Video
TV
Channel
+
-
Volume
+
-
Settings
Close
(5)
SETTINGS
BUTTON
(3)
TV CONTROL
SECTION

Name	Input
Lane 1	None (Off)
Lane 2	None (Off)
Lane 3	None (Off)
Lane 4	None (Off)

TV Control

The functions of the buttons on the TV Control screen are:

(1) **Lane Select -** Entry box used to select the lane or lane range for the standard overhead monitors to be controlled.

(2) **Action Section -** Area used to control the overhead display.

Scoring **-** This button causes the overhead monitors entered in the lane select box to display scoresheet or advertising.

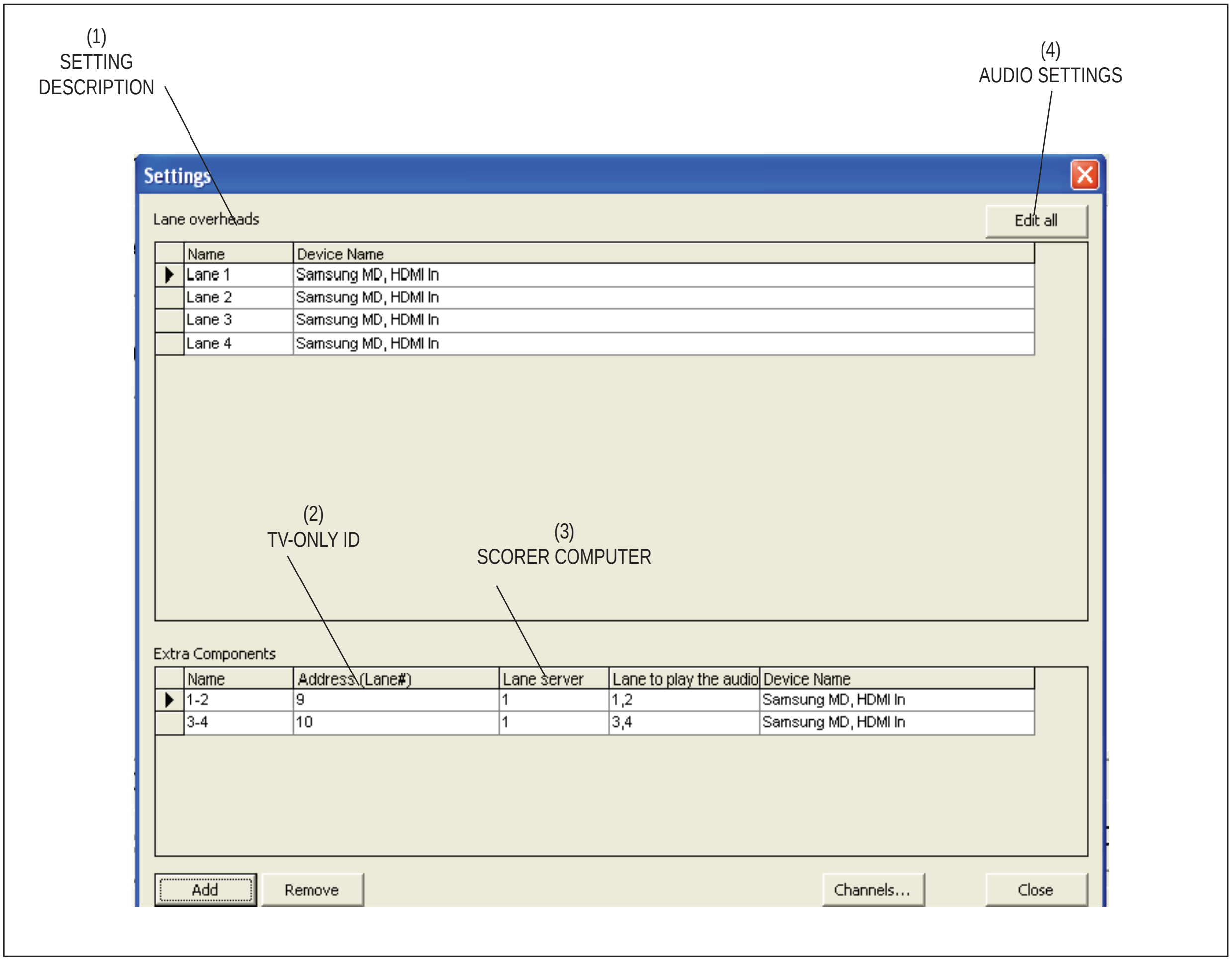
TV **-** This button causes the overhead monitors entered in the lane select box to switch to the tuner input. Once the tuner input is selected the channel and volume of the selected overhead can be controlled using the buttons located in the TV control section of the screen.

On / Off **-** These buttons cause the overhead monitors selected in the lane select box to turn on or off. The off selection is typically it is used to turn off the monitors when the business is closed.

(3) **TV Control Section-** These buttons are used to change the channel and control the volume of the selected overhead. The source input of monitor must be set to TV (tuner).

(4) **Monitor Type Select -** Select the desired tab to show a list of available scoresheet monitors or TV-only type monitors.

(5) **Settings -** Select this button to display the monitor configuration screen. Refer to figure titled *Monitor Settings***.**



Lane overheads

Name	Device Name
Lane 1	Samsung MD, HDMI In
Lane 2	Samsung MD, HDMI In
Lane 3	Samsung MD, HDMI In
Lane 4	Samsung MD, HDMI In

Extra Components

Name	Address (Lane#)	Lane server	Lane to play the audio	Device Name
1-2	9	1	1,2	Samsung MD, HDMI In
3-4	10	1	3,4	Samsung MD, HDMI In

Monitor Settings

(1) **Setting Description -** This field is used to enter a name for the TV- Only monitor to be displayed on the TV Only monitor control page. This is a text field that allows letters and numbers to be entered. The name of the TV Only monitor typically is something descriptive about the monitor’s location and were the audio is played.

(2) **TV-Only ID -** This field is used to identify the ID of the TV-Only monitor as set on the DIP switches inside the monitor. Standard setup is to set the ID to the left lane number that the monitor is associated with.

(3) **Scorer Computer -** This field is used to identify which scoring computer the TV Only monitor is connected to. This should be a number that corresponds to the scoring computer’s name. For example, if the TV Only monitor is connected to the first scoring computer called “SLAVE1” or “Scorer Computer 1” the number one is entered in this field.

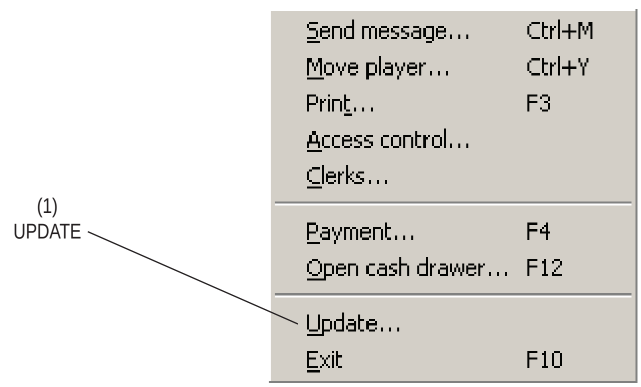
(4) **Audio Settings-** This field controls which lanes should receive the audio signal when the TV-Only monitor is turned on. For example, if the TV-Only monitor is located between lanes two and three, where should the audio be heard when the TV-Only monitor is turned on. It is possible to make multiple lines in this table for the same monitor to allow different configurations of the audio.

File Menu

The “File” menu is used to determine user access to the system, move players, and update the programming on Scorer computers. The selection that is important to the mechanic is Updating. Refer to the figure titled *File Menu.*

To enter a service menu screen select:

1. Select the “File” menu.
2. Select the Update menu item.
3. Enter a password, if required.


Send message... Ctrl+M
Move player... Ctrl+Y
Print... F3
Access control...
Clerks...
Payment... F4
Open cash drawer... F12
Update...
Exit F10
(1)
UPDATE

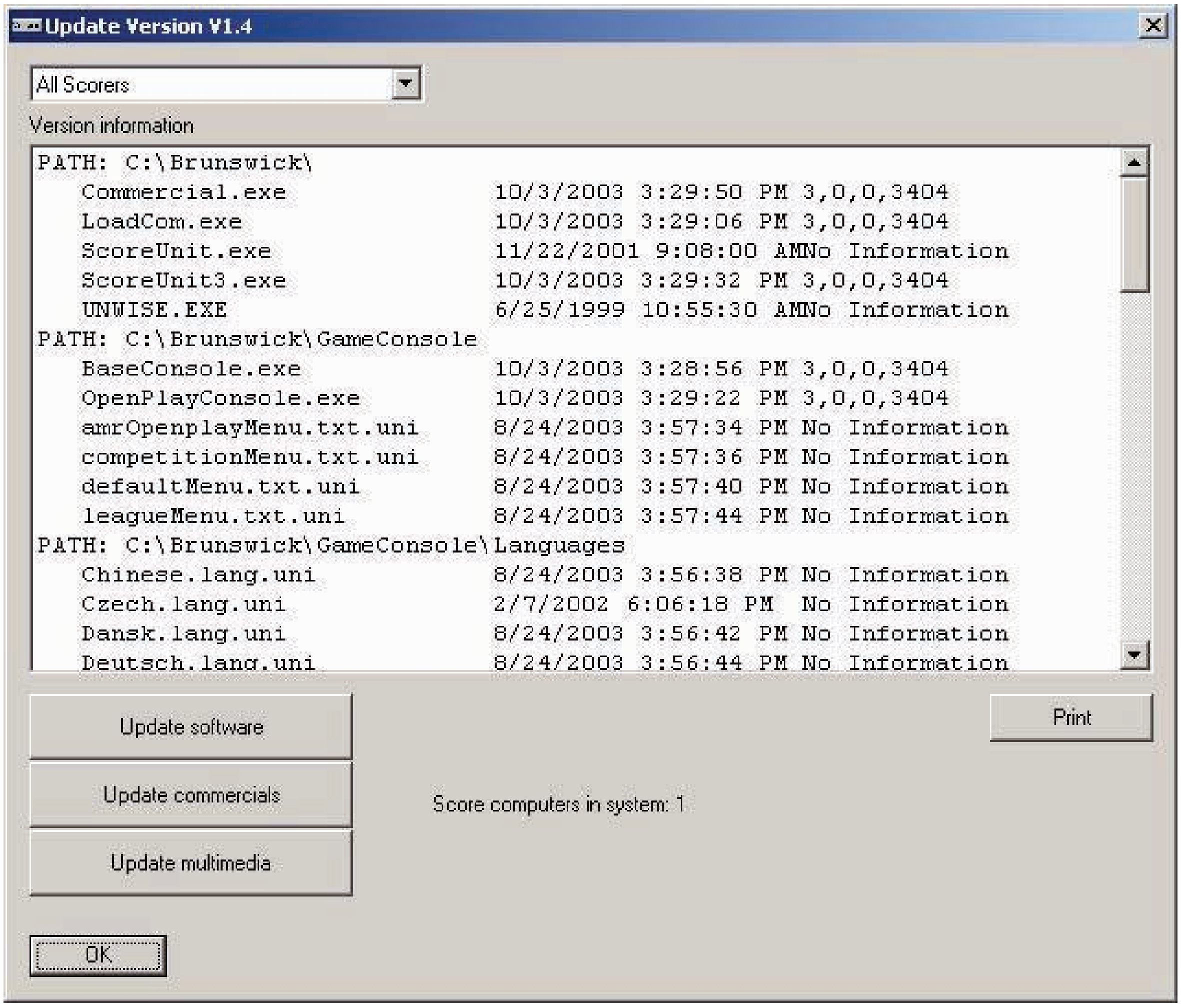
File Menu

(1) UPDATE

Updating The Scorer Computer

The update function sends new scoring computer software, commercial advertisements and/or exciter graphics and sound updates to the scorer computers.

Updates may be sent to individual scoring computers or to all scoring computers at the same time. Software, commercial advertisements and scorer exciter graphics and sounds must be updated as separate steps. The update function also displays information about the versions of the software currently installed on the scoring computers. This information is helpful when troubleshooting the system with a Brunswick Customer Response Center representative. Refer to figure titled *Update Window.*



```
PATH: C:\Brunswick\
   Commercial.exe               10/3/2003 3:29:50 PM 3,0,0,3404
   LoadCom.exe                  10/3/2003 3:29:06 PM 3,0,0,3404
   ScoreUnit.exe                11/22/2001 9:08:00 AMNo Information
   ScoreUnit3.exe               10/3/2003 3:29:32 PM 3,0,0,3404
   UNWISE.EXE                   6/25/1999 10:55:30 AMNo Information
PATH: C:\Brunswick\GameConsole
   BaseConsole.exe              10/3/2003 3:28:56 PM 3,0,0,3404
   OpenPlayConsole.exe          10/3/2003 3:29:22 PM 3,0,0,3404
   amrOpenplayMenu.txt.uni      8/24/2003 3:57:34 PM No Information
   competitionMenu.txt.uni      8/24/2003 3:57:36 PM No Information
   defaultMenu.txt.uni          8/24/2003 3:57:40 PM No Information
   leagueMenu.txt.uni           8/24/2003 3:57:44 PM No Information
PATH: C:\Brunswick\GameConsole\Languages
   Chinese.lang.uni             8/24/2003 3:56:38 PM No Information
   Czech.lang.uni               2/7/2002 6:06:18 PM  No Information
   Dansk.lang.uni               8/24/2003 3:56:42 PM No Information
   Deutsch.lang.uni             8/24/2003 3:56:44 PM No Information
```

Score computers in system: 1

Update Window

Updating Scoring Computer Software

1. Select the File menu.
2. Select the Update menu item.
3. Using the drop down menu at the top of the screen, select the scoring computer to be updated, or select “All” to update the software in all of the scoring computers.

4. Select the “Update Software” button.
5. While the software is being updated, the system will display a download status indicator.
6. When completed, select the “OK” button.
7. Follow the steps to reboot the scoring computer or computers that have been updated.

NOTE: *This process may take 2-5 minutes per scoring computer.*

Updating Commercial Advertisement Graphics

1. Select the File menu.
2. Select the Update menu item.
3. Using the drop down menu at the top of the screen, select the scoring computer to be updated, or select “All” to update the software in all of the scoring computers.
4. Select the “Update Commercials” button.
5. While the commercials are being updated, the system will display a download status indicator.
6. When completed, select the “OK” button.
7. Follow the steps to reboot the scoring computer or computers that have been updated.

NOTE: *This process may take 2-5 minutes per scoring computer.*

Updating Exciter Graphics and Sounds

1. Select the File menu.
2. Select the Update menu item.
3. Using the drop down menu at the top of the screen, select the scoring computer to be updated, or select “All” to update the software in all of the scoring computers.
4. Select the “Update Multimedia” button.
5. While the exciter graphics and sounds are being updated, the system will display a download status indicator.
6. When completed, select the “OK” button.
7. Follow the steps to reboot the scoring computer or computers that have been updated.

NOTE: *This may process may take 10-15 minutes per scoring computer.*

Scorer Computer Synchronization

After Replacing the hard drive or updating the software on the Scorer Computer, the control desk computer and the Scorer Computer must be synchronized. To synchronize them perform the following steps:

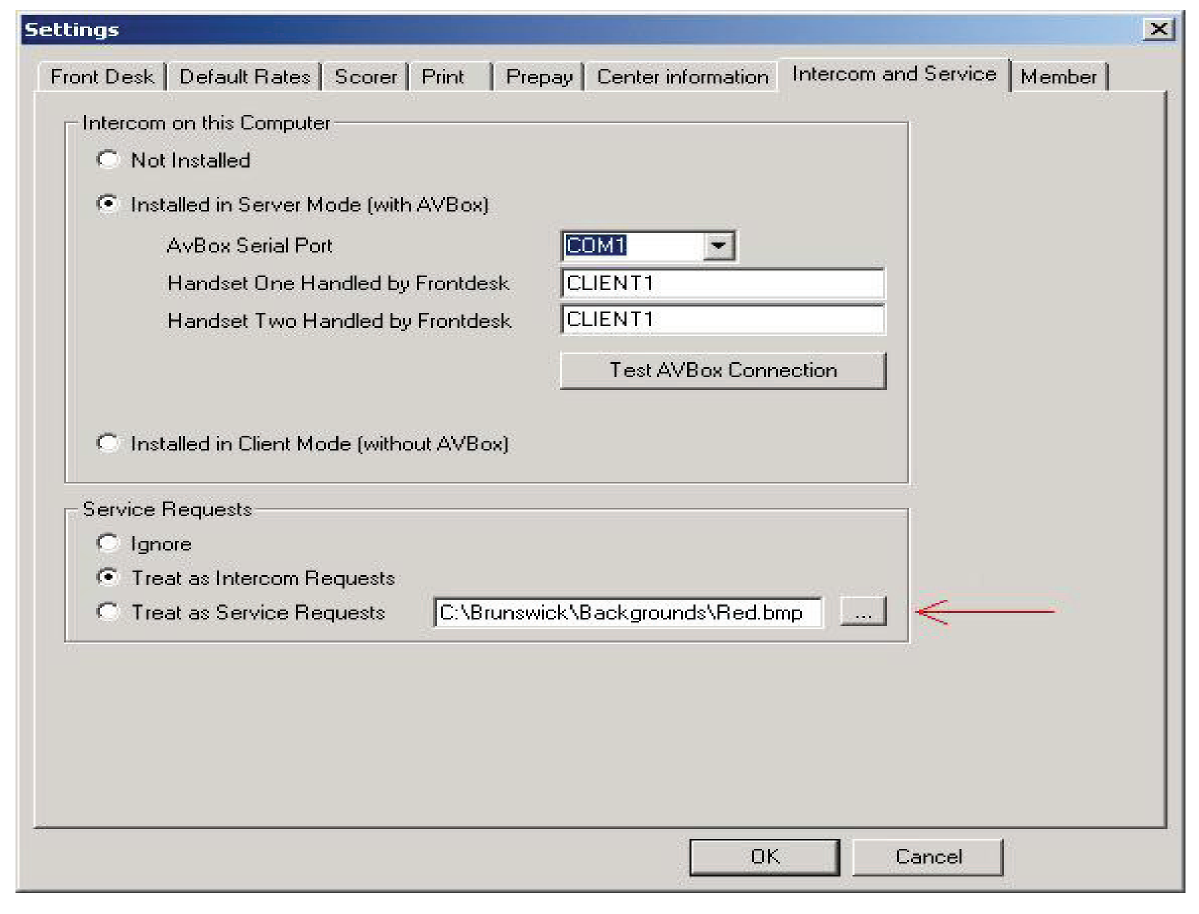
Vector Version 3.0 or prior

1. Wait until the Scorer Computer(s) have restarted and the communication indicator (i.e. green lane number bars) on the Vector Lane Status Screen have appeared.

2. Click on the Settings menu and choose Setup from the drop down menu.

3. Verify that the fields on each tab selection are set as desired.

4. Select the Intercom and Service Tab click the Browse button (small box with three dots) that is located in the Service Request area. Refer to figure titled *Intercom and Service Tab.*



Settings
Front Desk
Default Rates
Scorer
Print
Prepay
Center information
Intercom and Service
Member
Test AVBox Connection
...
OK
Cancel

Intercom on this Computer

○ Not Installed

● Installed in Server Mode (with AVBox)

AvBox Serial Port: COM1

Handset One Handled by Frontdesk: CLIENT1

Handset Two Handled by Frontdesk: CLIENT1

○ Installed in Client Mode (without AVBox)

Service Requests

○ Ignore

● Treat as Intercom Requests

○ Treat as Service Requests: C:\Brunswick\Backgrounds\Red.bmp

Intercom and Service Tab

5. Double click on the File Red.bmp or select .bmp a file of your choice and click OK.

6. From the Setup window, Click the OK button again. The Vector program will restart automatically.

7. Click on the Settings menu and choose Lane settings from the drop down menu. Verify that the options are set as desired. Click the OK button.

***NOTE:** If you need to update more than one scoring computer you will need to update each lane range separately. Use the Apply button instead of the OK button until you are on the last lane range tab, then use OK.*

8. Click on the Settings menu and choose Volume from the drop down menu.

9. Adjust the slide bar to the desired level and click the OK button.

10. Press the F7 function key, highlight American League, and click the OK button.

11. Click the Config button, the OK button and then the Cancel button.

12. Press the F2 key to display the Open Play window. Ensure that there is no personnel or equipment on the lanes or the pinsetters. In the Lane text box type in the lane range for the center i.e. 1-24, then select Start.

13. Verify that all the lanes turn on with score sheets.

14. Click on the Stop button in the top right corner and type in the lane range for the center in Lanes text box. Click the OK button to shut down all the lanes.

Vector Version 3.2 or higher

1. Wait until the Scorer Computer(s) have restarted and the communication indicator (i.e. green lane number bars) on the Vector Lane Status Screen have appeared.

2. Click on the Service menu and choose Resyc Scorers from the drop down menu.

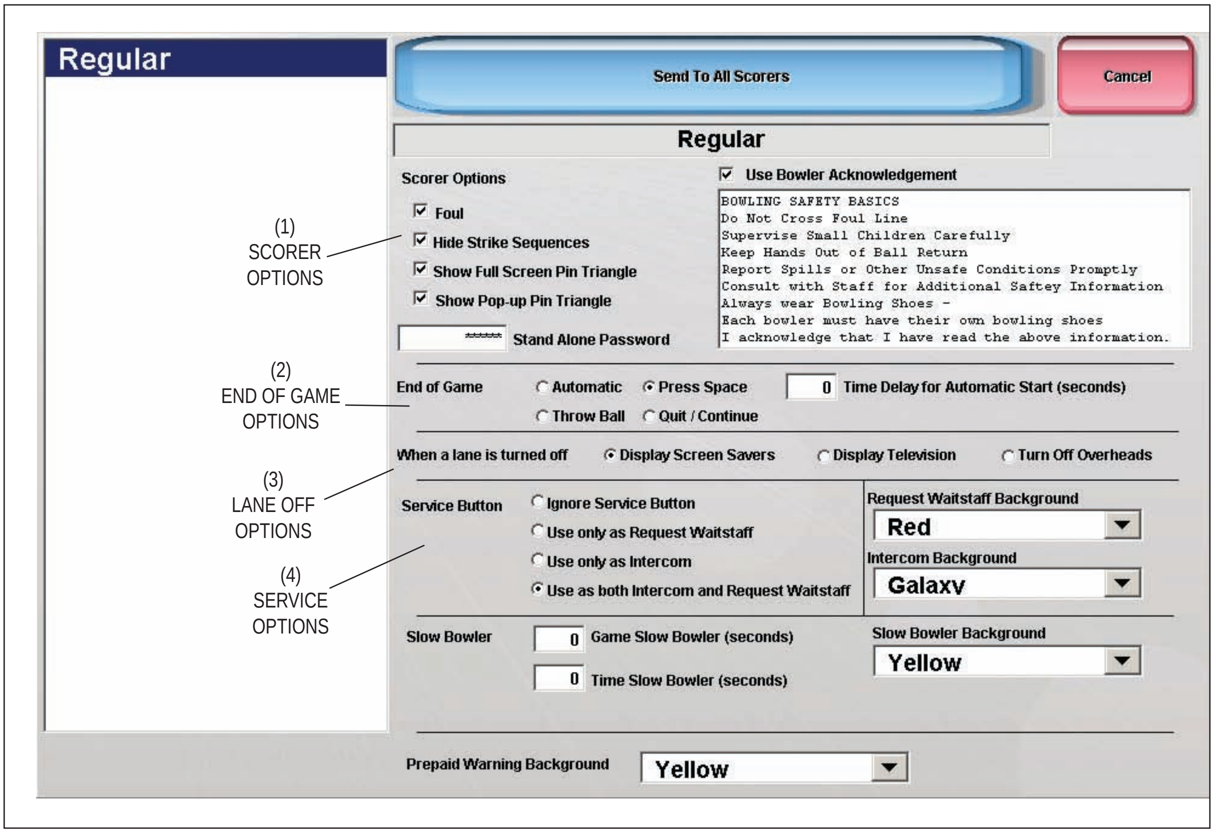
VECTOR PLUS CONTROL DESK

The setup selections for the Vector Plus control system can be found on Vector Plus' Lane Status screen or as an icon on the Windows desktop.

Lane Status - Vector Settings

The "Vector Settings" button on the Lane Status screen is used to control various system settings. The selections important to the mechanic are Scoring Settings, Audio Video, Pinsetter Settings, and Pin Camera Settings.

Scoring Settings



Regular

Regular

Scorer Options
☑ Foul
☑ Hide Strike Sequences
☑ Show Full Screen Pin Triangle
☑ Show Pop-up Pin Triangle
****** Stand Alone Password

☑ Use Bowler Acknowledgement

BOWLING SAFETY BASICS
Do Not Cross Foul Line
Supervise Small Children Carefully
Keep Hands Out of Ball Return
Report Spills or Other Unsafe Conditions Promptly
Consult with Staff for Additional Saftey Information
Always wear Bowling Shoes -
Each bowler must have their own bowling shoes
I acknowledge that I have read the above information.

End of Game ○ Automatic ● Press Space ○ Throw Ball ○ Quit / Continue
0 Time Delay for Automatic Start (seconds)

When a lane is turned off ● Display Screen Savers ○ Display Television ○ Turn Off Overheads

Service Button
○ Ignore Service Button
○ Use only as Request Waitstaff
○ Use only as Intercom
● Use as both Intercom and Request Waitstaff

Request Waitstaff Background: Red
Intercom Background: Galaxy

Slow Bowler
0 Game Slow Bowler (seconds)
0 Time Slow Bowler (seconds)

Slow Bowler Background: Yellow

Prepaid Warning Background: Yellow

Scorer Settings Screen

(1) SCORER OPTIONS
(2) END OF GAME OPTIONS
(3) LANE OFF OPTIONS
(4) SERVICE OPTIONS

Scorer Options
This section controls the following scorer and system options:

Foul - This option controls whether or not the scorer will score a foul when the automatic foul detector senses a foul. If this option is enabled, a score of F with a numeric value of zero will be scored when a bowler crosses the foul line and the foul unit registers a foul.

Hide Strike Sequences - This option controls whether or not the scorer will display the running score for strings of strikes. If this option is selected, the scorer will not show the score for a string of strikes until the string ends. If this option is not selected the scorer will immediately display the running score during a string of strikes.

Show Full Screen Pin Triangle - This option controls whether or not the "Full Screen Pin Triangle" will be displayed after the first ball of a frame when pins were left standing. This display completely obscures the scoresheet for a short period of time. The benefit to this display is that there is a place to display a small advertising message. There can be an unlimited number of advertising messages displayed on the full screen pin triangle. They are stored in the C:\Brunswick\Media\Commercial\Thumbnail directory. The advertising graphics must be 260 pixels wide, 70 pixels tall and 256 colors. The graphics must have a .bmp extension, but there is no other naming convention. This option can be used in conjunction with the "Pop Up Pin Triangle" Option.

Show Pop Up Pin Triangle - This option controls whether or not the pop-up pin triangle will be displayed after the first ball of a frame when pins were left standing. This display is slightly less than one quarter of the screen, and moves around the screen so that the current score is usually visible. This display is not removed until the second ball is thrown. This option can be used in conjunction with the "Full Screen Pin Triangle" option.

Stand Alone Password - This option controls whether or not the scorer will ask for a password when in stand-alone mode. If the password field is blank the bowler will NOT be prompted for a password when using the console in stand alone mode.

Use Bowler Acknowledgement - This option controls whether a custom message will display at the scorer prior after the bowlers enters their name. The bowler must "acknowledge" the message before the lane will turn on.

End Of Game Options

This section controls what the scorer will do when a game of bowling is completed, and how it will interact with the bowler to start the next game. The following options are available:

Auto - This option will automatically clear the score sheet and start the next game after the delay specified in the "Time Delay for Automatic Starts" box. No bowler interaction is necessary.

Throw Ball - This option will automatically clear the score sheet and start the next game only after the bowler throws the first ball for the next game.

Press Space - This option will prompt the bowler to press the space key on the keyboard or LCD Touch Screen. If the bowler does not press the space key within the number of seconds entered in the field, the system will automatically clear the score sheet and start the next game.

Quit/Continue - This option will ask the bowler whether or not they wish to continue bowling. If they select quit, the lane will turn off. If they select continue the system will automatically clear the score sheet and start the next game.

Lane Off Section

This section controls what will be displayed on the overhead monitors after the lane is turned off. The following two options are available:

Screen Savers - When this option is select the system will display the Advertising graphics which are used as screen savers. The Advertising graphics are stored in the C:\Brunswick\Media\Commercial directory. Advertising graphics must be properly named. The naming convention used by the system is: PauseX.EXT where X equals a sequential number starting with one. Advertisements will play in this sequence. And EXT equals the extension from one of the file formats. There are three possible Advertising graphic file formats. The system supports the following formats:

Windows Bitmap (.BMP) **-** 1920x1080 (32 bit) resolution.

Vector Slideshow (.DLT) **-** This format is a special format that combines a series of bitmap graphics into a animated show. Use the BMP2DLT.exe converter found in the C:\Brunswick\Utility directory to convert bitmap graphics into Vector Animations.

MPEG (.MPG) **-** This format is digital video and usually comes from a source such as a video camera. The system supports MPEG1.

TV - When this option is selected the system will display the video signal provided by the TV distribution center when lanes are turned off.

Turn Off Overhead - When this option is selected the system will turn the overhead off when lanes are turned off.

Service Options Section

This section controls the function of the “Service” button on the scorer console. The following options are available:

Ignore - When this option is selected the service button at the scorer will be ignored.

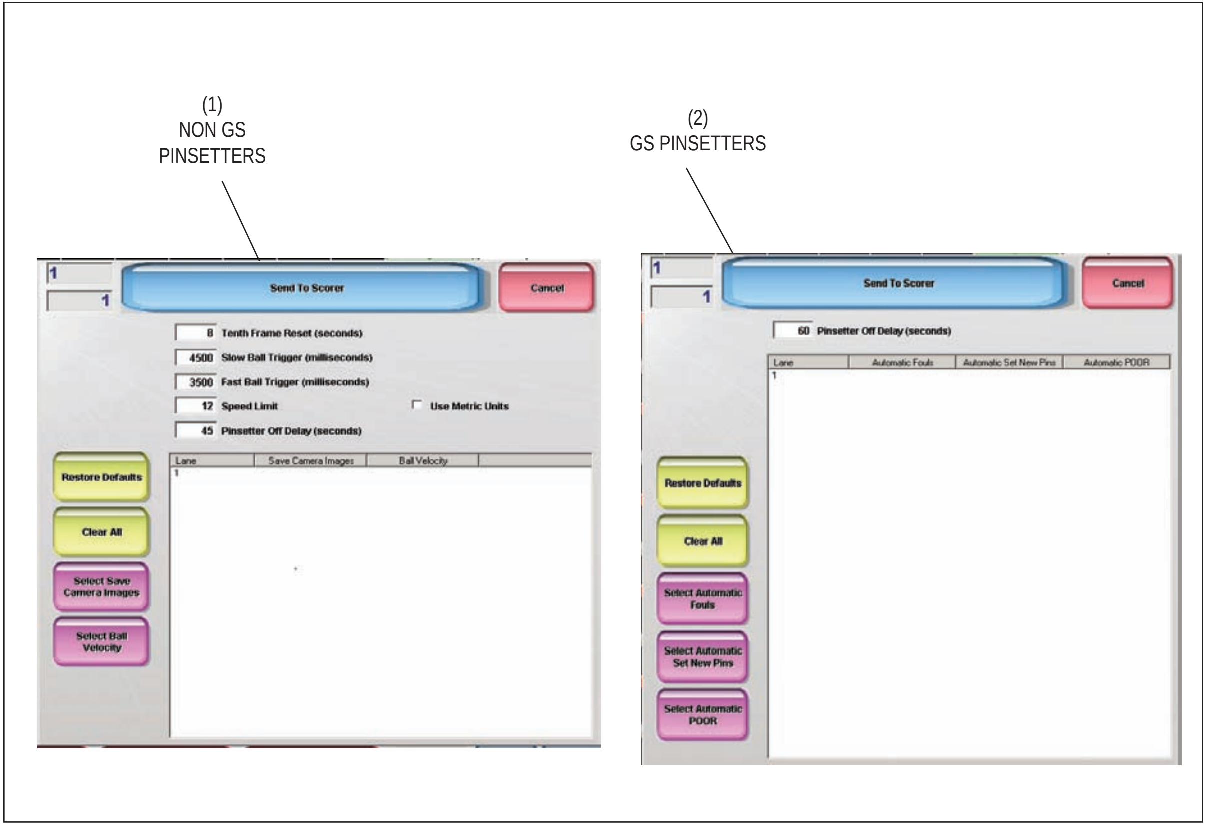
Intercom - When this option is selected, the service button at the scorer will place an intercom request in the queue at the front desk and change the background of the scoresheet to the selected service graphic.

Waitstaff - When this option is selected, the service button at the scorer will change the background of the scoresheet to the selected waitstaff graphic. When this option is selected, intercom calls cannot be made to the front desk.

Both - When this option is selected, the bowler will get an option of selecting either intercom or waitstaff when they select the service button at the scorer. The background of the scoresheet will change to the waitstaff or intercom graphic as appropriate.

Pinsettings Settings

The Pinsettings button is used to set up the operating characteristics of the pinsetters. The selections available are determined by the pinsetter type installed in the center.


(1)
NON GS
PINSETTERS
(2)
GS PINSETTERS
Send To Scorer
Cancel
Restore Defaults
Clear All
Select Save Camera Images
Select Ball Velocity
Send To Scorer
Cancel
Restore Defaults
Clear All
Select Automatic Fouls
Select Automatic Set New Pins
Select Automatic POOR

(1)

1

1

8 Tenth Frame Reset (seconds)

4500 Slow Ball Trigger (milliseconds)

3500 Fast Ball Trigger (milliseconds)

12 Speed Limit

☐ Use Metric Units

45 Pinsetter Off Delay (seconds)

Lane	Save Camera Images	Ball Velocity
1		

(2)

1

1

60 Pinsetter Off Delay (seconds)

Lane	Automatic Fouls	Automatic Set New Pins	Automatic POOR
1			

Pinsetting screen

Pinsettings - (Non GS Pinsetters)

The “10th Frame Reset” time field controls how long the scorer should wait after the third ball in the tenth frame is bowled, before the machine is triggered. This setting must allow for the machine to complete the previous cycle. If the machine is triggered while it is still in motion from the previous cycle, the machine will ignore the trigger, and it will appear that the machine is not resetting automatically after the third ball of the tenth frame. In some situations it may cause the machine to stop in mid cycle. If the delay is set too long the machine may cycle when a bowler isn’t expecting it, especially if they manually triggered the machine while waiting for the automatic trigger.

NOTE:

A good starting value for “10th Frame Reset” is 10 seconds.

The “Slow Ball Trigger” field is used to set the amount of delay from the time a slow ball breaks the ball detect beam until the pinsetter is triggered. Systems that use pinfall cameras will also calculate the ball’s speed. When the ball speed is below the value set in the “Speed Limit” field, the system uses the “Slow Ball Trigger” value. When the ball speed is higher than the value set in the “Speed Limit” field, the system uses the “Fast Ball Trigger” value.

NOTE: *A good starting value for “Slow Ball Trigger” is 10 seconds.*

The “Fast Ball Trigger” field is used to set the amount of delay from the time a fast ball breaks the ball detect beam until the pinsetter is triggered. Systems that use pinfall cameras will also calculate the ball’s speed. When the ball speed is higher than the value set in the “Speed Limit” field, the system uses the “Fast Ball Trigger” value. When the ball speed is below the value set in the “Speed Limit” field, the system uses the “Slow Ball Trigger” value.

NOTE: *A good starting value for “Slow Ball Trigg” is 4500 ms. For “Fast Ball Trigger” 2000 ms is a good starting value.*

The “Speed Limit” field is used to set the threshold between the “Slow” and “Fast” ball speeds which is used to control the delay before the machine is automatically triggered.

NOTE: *A good starting value is 7.*

The “Pinsetter Off Delay” field is used to control how many seconds the pinsetter remains on after prepaid bowling has expired. This value should be set so that bowlers do not think that they can take extra shots, yet preventing the pinsetter from turning off before bowling balls are returned, which would cause an under lane ball return call.

NOTE: *A good starting value is 45 seconds.*

Pinsettings - (GS Pinsetters)

Automatic Fouls - This option controls whether the pinsetter will react to a foul signals received from GS pinsetter. When the option is enabled, the pinsetter will perform a foul cycle by sweeping standing pins and setting a full rack 2nd ball. If disabled the pinsetter will cycle normally. In either case the scorer will score an “F”. When the Foul function in the GS pinsetter is disabled the these settings are not functional.

Automatic Set New Pins When Issued - This option controls whether the pinsetter will sweep the pin deck and set a new rack of pins when the pinsetter is assigned to bowling.

Automatic POOR (Pin Out Of Range) - This option controls whether the pinsetter will automatically handle pins that are out of range by sweeping the deck clear, scoring zero pins, and allowing the bowler to continue bowling or black out and wait for the mechanic to reset the pinsetter.

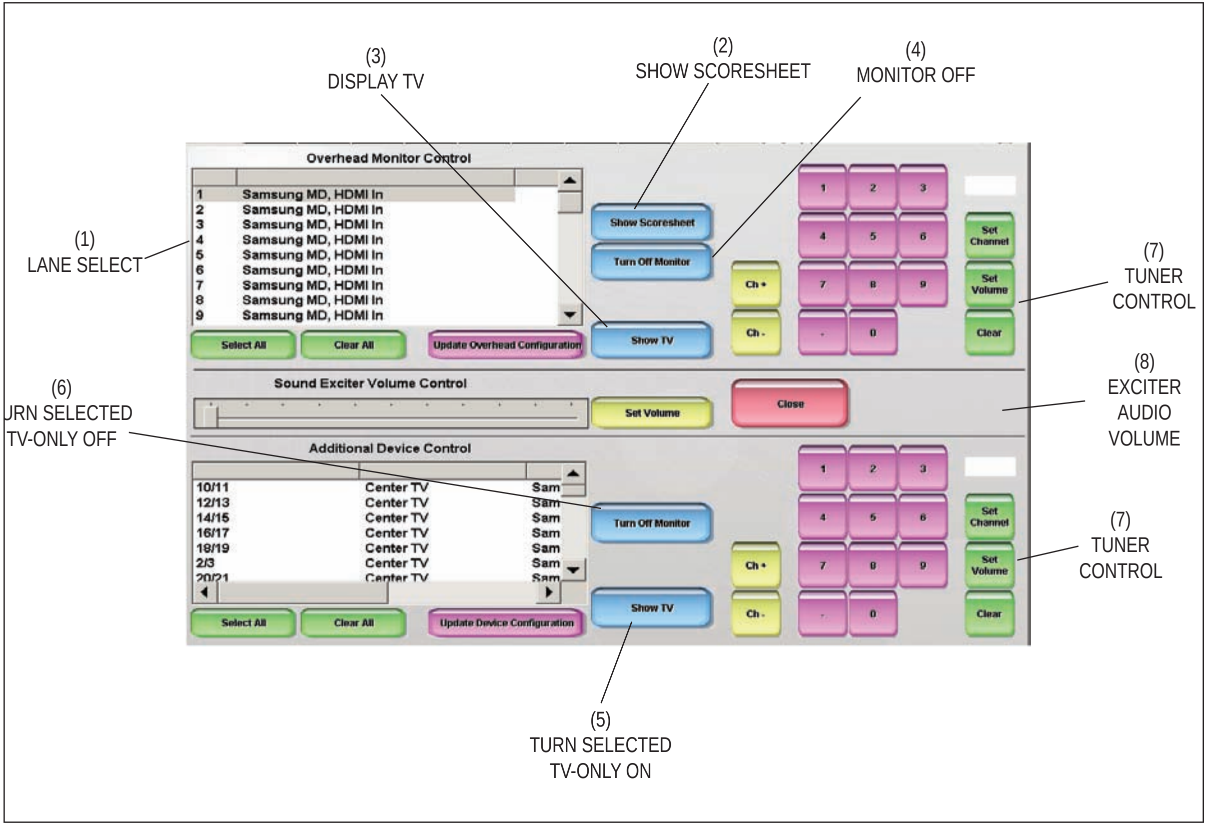
Pinsetter Off Delay - This field is used to control how many seconds the pinsetter remains on after prepaid bowling has expired. This value should be set so that bowlers do not think that they can take extra shots, yet preventing the pinsetter from turning off before bowling balls are returned, which would cause an under lane ball return call.

NOTE: *A good starting value is 45 seconds.*

Audio Video

The Audio Video button is used to control the video display of the overhead monitors. Overhead monitors can display the video signal provided TV distribution center or scoresheet information from the scorer computer. Overhead monitors usually display advertising messages (commercials) on lanes that are not being used, but these monitors can also be turned off. The Audio Video button is also used to turn optional TV-Only monitors on and off.

Additionally, the volume level for the Exciter audio played through the console speakers is set on this screen. Refer to the figure titled *Audio Video Screen.*


(3)
DISPLAY TV
(2)
SHOW SCORESHEET
(4)
MONITOR OFF
(1)
LANE SELECT
(7)
TUNER
CONTROL
(8)
EXCITER
AUDIO
VOLUME
(6)
URN SELECTED
TV-ONLY OFF
(7)
TUNER
CONTROL
(5)
TURN SELECTED
TV-ONLY ON
Overhead Monitor Control
Select All
Clear All
Update Overhead Configuration
Show Scoresheet
Turn Off Monitor
Show TV
Ch +
Ch -
1
2
3
4
5
6
7
8
9
-
0
Set Channel
Set Volume
Clear
Sound Exciter Volume Control
Set Volume
Close
Additional Device Control
Select All
Clear All
Update Device Configuration
Turn Off Monitor
Show TV
Ch +
Ch -
1
2
3
4
5
6
7
8
9
-
0
Set Channel
Set Volume
Clear

1	Samsung MD, HDMI In
2	Samsung MD, HDMI In
3	Samsung MD, HDMI In
4	Samsung MD, HDMI In
5	Samsung MD, HDMI In
6	Samsung MD, HDMI In
7	Samsung MD, HDMI In
8	Samsung MD, HDMI In
9	Samsung MD, HDMI In

10/11	Center TV	Sam
12/13	Center TV	Sam
14/15	Center TV	Sam
16/17	Center TV	Sam
18/19	Center TV	Sam
2/3	Center TV	Sam
20/21	Center TV	Sam

Audio Video Screen

The functions of the buttons on the Audio Video screen are:

(1) **Lane Select -** Entry box used to select the lane or lane range for the regular overhead monitors to be controlled.

(2) **Show Scoresheet -** This button causes the overhead monitors selected in the lane select box to display scoresheet or advertising (commercials).

(3) **Show TV -** This button causes the overhead monitors selected in the lane select box to display TV video signal coming from the TV distribution center.

(4) **Monitor Off -** This button causes the overhead monitors selected in the lane select box to turn off. Typically it is used to turn off the monitors when the business is closed.

(5) **Show TV (TV-Only) -** Select this button to turn on the selected TV-Only monitors.

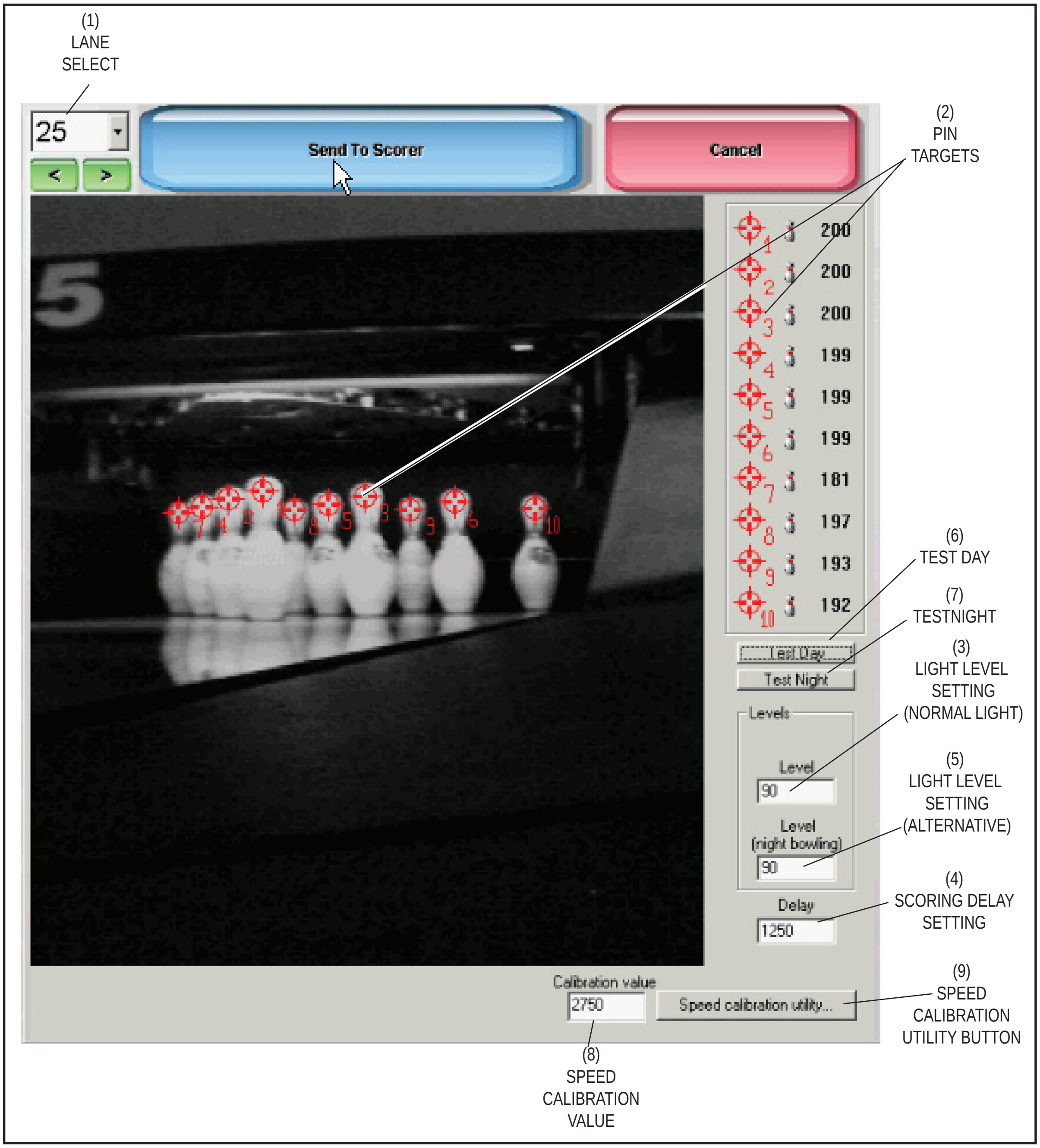
(6) **Turn Off Monitor (TV-Only) -** Select this button to turn on the selected TV-Only monitors.

(7) **Tuner Control -** These buttons are used control the select switch TV channels and control the TV volume on the selected monitor. .

(8) **Exciter Audio Volume -** Controls the sound lever of the exciter audio.

Pin Camera Settings (Non GS Only)

The “Pin Camera Settings” function is used to control the operation of the Pinfall Camera. After a preset time delay the score is determined by comparing the light level in a target area with a threshold or reference value. If the light level inside the target is higher than the threshold value, the scorer will determine the pin is standing. If the light level inside the target is lower than the threshold value, the scorer will determine the pin has fallen and score it as pinfall. The system has two light thresholds. One that is set up for normal operation and one that is set up for operation in low light conditions such as black lights, or times when lights over the bowling lanes are turned off. Refer to the figure titled *Pin Camera Screen*.


(1) LANE SELECT
(2) PIN TARGETS
(6) TEST DAY
(7) TESTNIGHT
(3) LIGHT LEVEL SETTING (NORMAL LIGHT)
(5) LIGHT LEVEL SETTING (ALTERNATIVE)
(4) SCORING DELAY SETTING
(9) SPEED CALIBRATION UTILITY BUTTON
(8) SPEED CALIBRATION VALUE
<
>
Send To Scorer
Cancel
Test Day
Test Night
Speed calibration utility...
5
1
2
3
4
5
6
7
8
9
10

Lane: 25

1	200
2	200
3	200
4	199
5	199
6	199
7	181
8	197
9	193
10	192

Levels

Level: 90

Level (night bowling): 90

Delay: 1250

Calibration value: 2750

Pin Camera Settings

(1) Lane Select - Drop down box used to select the lane for calibration.

(2) Pin Targets - The area where the camera looks to determine whether or not that pin is standing.

Targets are positioned by dragging them from the target area and placing them over the proper pins. Once in position the light level (0 - 255) coming from the pin will be shown in target area.

(3) **Light Level Setting (Normal Light) -** Setting used to determine the minimum light level needed to detect a pin as standing during normal bowling conditions. *A good rule of thumb is to select a value midpoint between the level of light shown for the darkest pin and the level displayed when a target is positioned on the background.* Normally the preset level will be in the 80 to 100 range, but if the lighting is dimmer or brighter than normal, it may fall outside these values.

The **Level** should be set to a substantially lower value than the light level lowest level pin. Two camera pictures of the same lane, taken immediately after each other, can have different light levels. For this reason it is a good idea to take several pictures in order to see how much the light can vary. Also remember that during bowling, the camera pictures are taken when the sweep is down. This results in pictures that are somewhat darker than the pictures used during setup. It is important to allow for this when setting the levels.

(4) **Scoring Delay -** The “Delay” time, in milliseconds, controls when the scoring picture is taken. The time starts once the rake/sweep has left the home position and the its switch has opened. This value should be set to allow the rake/sweep to drop to the guard position before the picture is taken. The delay should not be so long that the desk/table can make contact with the top of the pins. If the interval is too short it may include pins just about to fall or the sweep board may block the camera from seeing the pins. If the delay is too long, the pinsetter deck or table may block the pins.

NOTE: *1500-3000 milliseconds is a typical setting for most pinsetters.*

(5) **Light Level Setting (Alternative) -** An alternative light level setting that can be used to determine the minimum light level needed to detect a pin as standing. This is usually used to set a threshold for use during Cosmic or other low light situations. Use the selection located on the Lane Status - Lane Settings screen to determine which light level will be used.

(6) **Test Day -** Click this button to simulate how the camera will score when using the light level value entered in the Level box.

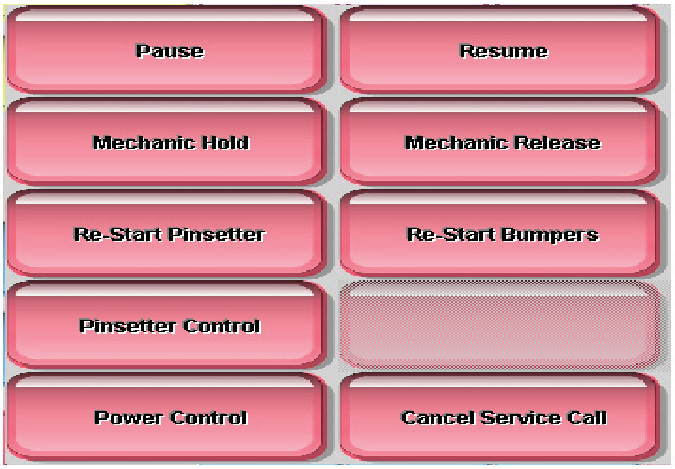
(7) **Test Night -** Click this button to simulate how the camera will score when using the light level value entered in the Level (Night Bowling) box.

(8) **Speed Calibration Value -** Enter a new value in this box to change the ball speed calculation. Increasing the value cause an increase in the ball speed shown on the overhead. Lower this value decreased the speed shown.

(9) **Speed Calibration Utility Button -** Click this button to run the ball speed calibration wizard.

Lane Status - Lane Control

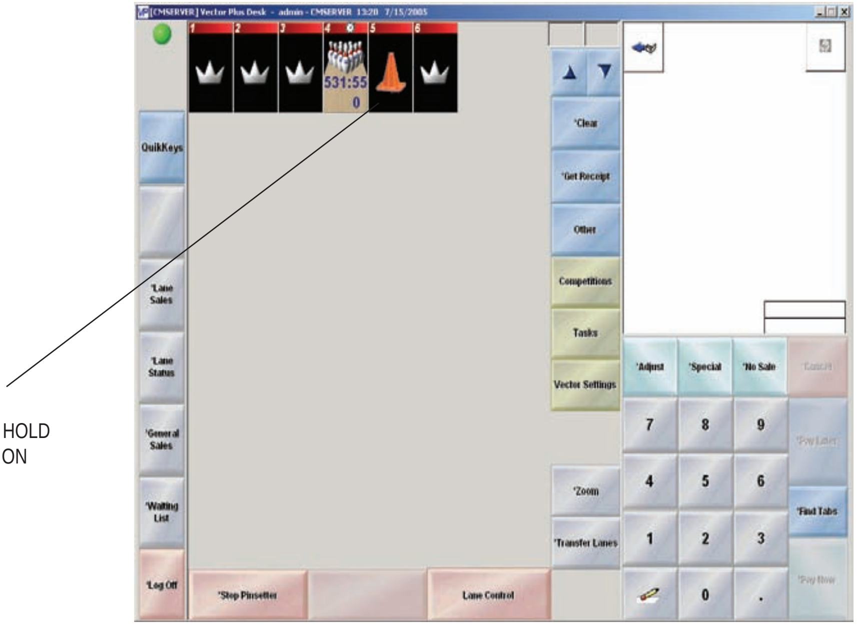
The “Lane Control” button on the Lane Status screen is used to manually control pinsetter functions and to reboot the scorer computers. Refer to figure titled *Lane Control Buttons*.


Pause
Resume
Mechanic Hold
Mechanic Release
Re-Start Pinsetter
Re-Start Bumpers
Pinsetter Control
Power Control
Cancel Service Call

Lane Control Buttons.

Mechanic Hold / Mechanic Release

This function is used to indicate that lanes are out of service or to place a lane that is currently issued to a customer on hold. When a time bowling lane is placed on hold, the amount of time that the lane is on hold is subtracted from the total amount due. Lanes that are broken or on hold will be displayed with an orange construction pylon. To put a lane on hold select the lane and click on “Mechanic Hold”. To release the lane click on “Mechanic Release”. Refer to the figures titled *Lane Control Buttons and Mechanic Hold Indication.*


[CMSERVER] Vector Plus Desk - admin - CMSERVER 13:20 7/15/2005
1
2
3
4
5
6
531:55
0
QuikKeys
*Lane Sales
*Lane Status
*General Sales
*Waiting List
*Log Off
*Stop Pinsetter
Lane Control
*Clear
*Get Receipt
Other
Competitions
Tasks
Vector Settings
*Zoom
*Transfer Lanes
*Adjust
*Special
*No Sale
Cancel
7
8
9
*Pay Later
4
5
6
*Find Tabs
1
2
3
*Pay Now
0
.

(1)
MECHANIC HOLD
INDICATION

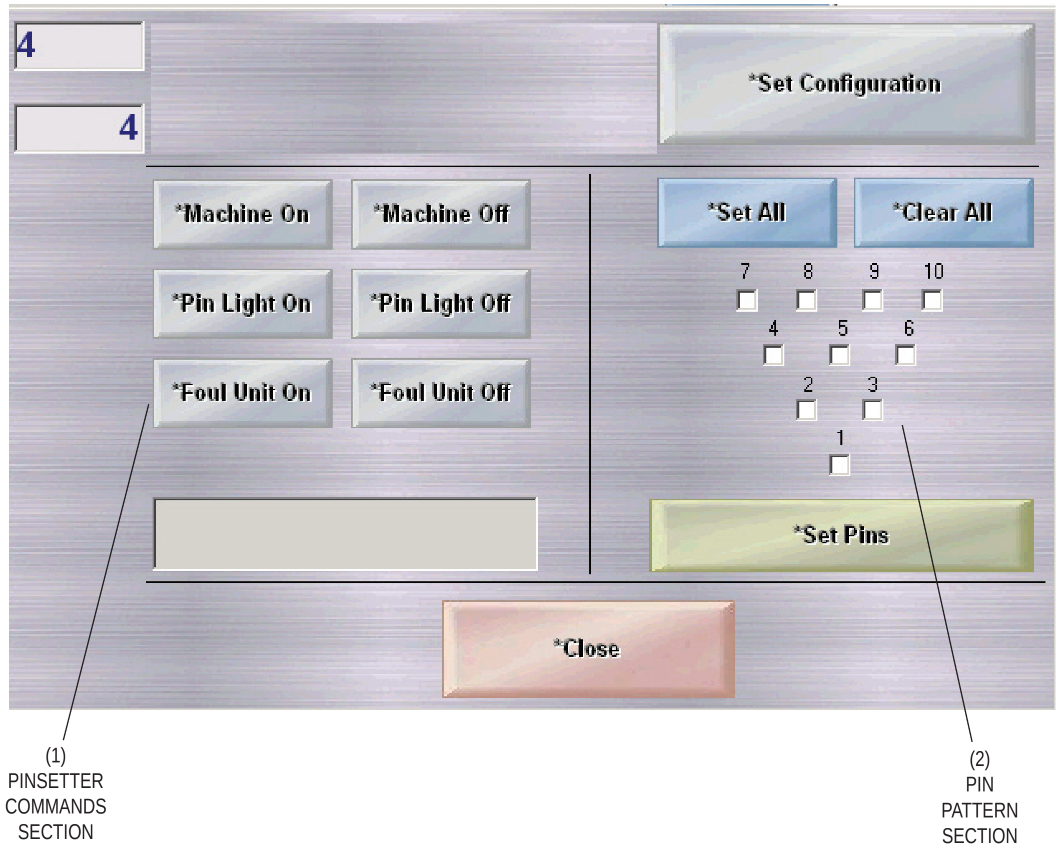
Mechanic Hold Indication

Pinsetter Control

This function provides the capability to directly control the pinsetters without assigning them to bowling. The functions available for the pinsetter is determined by the pinsetter type.

GS Pinsetters

Pinsetter control for GS pinsetter include the ability to turn the pinsetters on/off, set specific pins and turn on the pinlight without actually turning on the pinsetter. Refer to the figures titled *GS Pinsetter Control Window.*


4
4
*Set Configuration
*Machine On
*Machine Off
*Pin Light On
*Pin Light Off
*Foul Unit On
*Foul Unit Off
*Set All
*Clear All
7 ☐ 8 ☐ 9 ☐ 10 ☐
4 ☐ 5 ☐ 6 ☐
2 ☐ 3 ☐
1 ☐
*Set Pins
*Close
(1) PINSETTER COMMANDS SECTION
(2) PIN PATTERN SECTION

GS Pinsetter Control Window

(1) Pinsetter Commands Section

This section is used to send commands to the GS pinsetter. The following commands are available:

Machine On - Select this button to turn on the pinsetter for the selected lane or lane range.

Machine Off - Select this button to turn off the pinsetter for the selected lane or lane range.

WARNING! Turning off GS pinsetters in this manner is not to be used in an emergency. The pinsetter will complete it's current cycle prior to turning off. If a pinsetter must be shut off in an emergency, then use the "Stop Pinsetter" button located on the lane status screen.

Pin Light On - Select this button to turn on the pin deck lamp for the selected lane(s).

Pin Light Off - Select this button to turn off the pin deck lamp for the selected lane(s).

Foul Units On *- Select this button to turn on the foul units for the selected lane(s).

Foul Units Off *- Select this button to turn off the foul units for the selected lane(s).

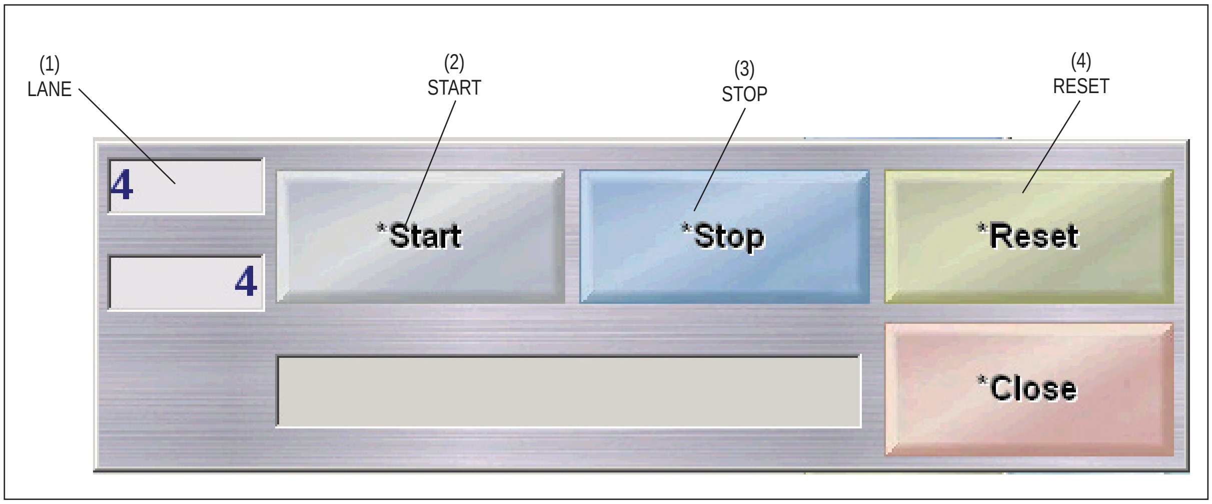
NOTE: Foul unit control is only available in centers that have upgraded to Vector scoring from BowlerVision or BowlerVision II.

(2) Pin Pattern Section
This section is used to respot pins during competition. Any pin combination can be set on any lane from the front desk. Pin selection is made by clicking on the box below the pin position. If a full rack of pins is desired click on "Set All" to select all pins. "Clear All" will clear all pin selection boxes. Once the desired pins are selected click the "Set Pins" button to set the specified pins.

To send the selected option to the scoring computers click "Set Configuration"

A-2 Control

This function is used to control non GS pinsetters without issuing the lanes. Common uses include turning on machines to set pin fall cameras, resetting pins after conditioning the lanes and turning lanes of for maintenance procedures. A-2 control functions can also be used on lanes that are issued. Refer to the figure titled *A-2 Control Window.*



A-2 Control Window

(1) Lane - Select which lanes will be affected.

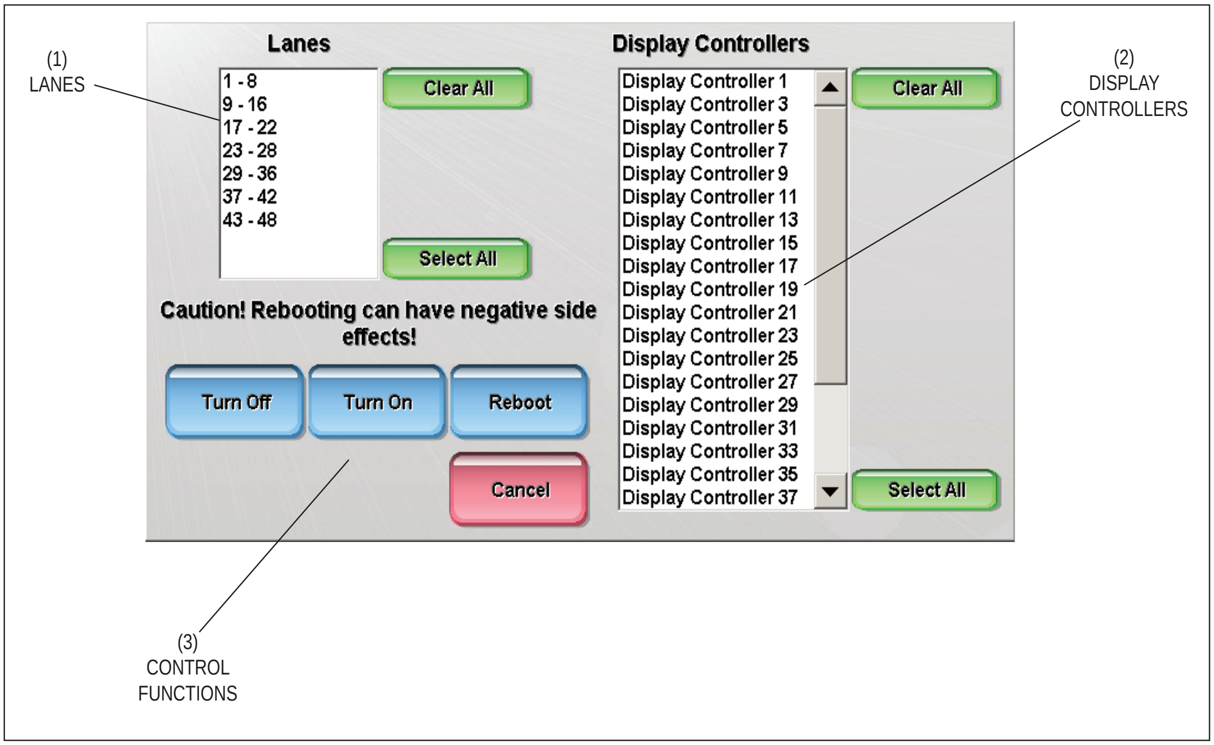
(2) Start - The "Start" button is used to turn on the pinsetters on the selected lanes.

(3) Stop - The "Stop" button is used to turn off the pinsetters on the selected lanes.

(4) Reset - The "Reset" button is used to cycle the pinsetters on the selected lanes. The reset function is the same as the reset button found on the ball return.

Power Control

The Power Control function allows the user to reboot, turn off, or turn on Scorer Computers, client computers, and Display Controllers from the control desk. It is suggested that the reboot procedure be done daily as a general maintenance procedure. To reboot, shutdown, or Wake-up (turn on) one or all of the units use the following procedure. Refer to figure titled *Power Control*.


(1)
LANES
Lanes
1 - 8
9 - 16
17 - 22
23 - 28
29 - 36
37 - 42
43 - 48
Clear All
Select All
Display Controllers
Display Controller 1
Display Controller 3
Display Controller 5
Display Controller 7
Display Controller 9
Display Controller 11
Display Controller 13
Display Controller 15
Display Controller 17
Display Controller 19
Display Controller 21
Display Controller 23
Display Controller 25
Display Controller 27
Display Controller 29
Display Controller 31
Display Controller 33
Display Controller 35
Display Controller 37
Clear All
Select All
(2)
DISPLAY
CONTROLLERS
Turn Off
Turn On
Reboot
Cancel
(3)
CONTROL
FUNCTIONS

Caution! Rebooting can have negative side effects!

Power Control

(1) **Lanes** - Entry box used to select the lane or lane range for the scoring computers to be controlled. Use the Clear All or Select All buttons to quickly select or clear the lane selection.

(2) **Display Controllers** - Entry box used to select the Display Controller(s) be controlled. Use the Clear All or Select All buttons to quickly select or clear the selection of Display Controllers.

(3) **Control Functions Reboot -** These buttons are used to power down, power on, or reboot the selected scorer computers and/or Display Controllers.

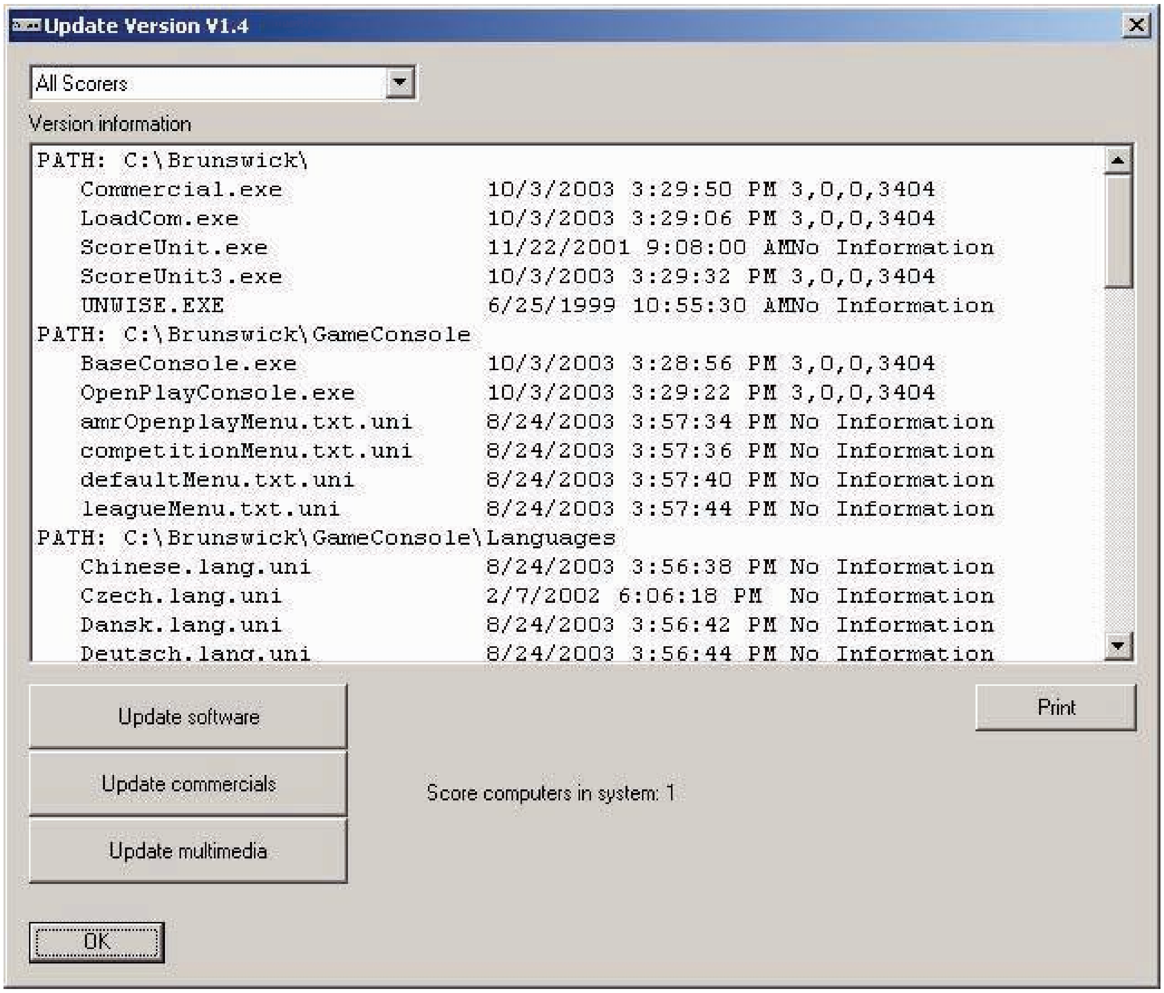
NOTE: *In order for the Turn On function to work properly, the MAC addresses of the units must be known. This is done by using the Wake-up on LAN section in the office program.*

Updating Scorer Software

The Scorer Update icon located on the Windows desktop of the server computer, allows the management to install new scoring computer software, update the commercial advertisements and/or update the exciter graphics and sounds.

Updates may be sent to individual scoring computers or to all scoring computers at the same time. Software, commercial advertisements and scorer exciter graphics and sounds must be updated as separate steps. The update function also displays information about the versions of the software currently installed on the scoring computers. This information is helpful when troubleshooting the system with a Brunswick Customer Response Center representative. Refer to figure titled *Update Window.*

***NOTE:** Updating the commercials and exciter graphics can also be done using the Media Manager program located on the server.*



```
PATH: C:\Brunswick\
   Commercial.exe            10/3/2003 3:29:50 PM 3,0,0,3404
   LoadCom.exe               10/3/2003 3:29:06 PM 3,0,0,3404
   ScoreUnit.exe             11/22/2001 9:08:00 AMNo Information
   ScoreUnit3.exe            10/3/2003 3:29:32 PM 3,0,0,3404
   UNWISE.EXE                6/25/1999 10:55:30 AMNo Information
PATH: C:\Brunswick\GameConsole
   BaseConsole.exe           10/3/2003 3:28:56 PM 3,0,0,3404
   OpenPlayConsole.exe       10/3/2003 3:29:22 PM 3,0,0,3404
   amrOpenplayMenu.txt.uni   8/24/2003 3:57:34 PM No Information
   competitionMenu.txt.uni   8/24/2003 3:57:36 PM No Information
   defaultMenu.txt.uni       8/24/2003 3:57:40 PM No Information
   leagueMenu.txt.uni        8/24/2003 3:57:44 PM No Information
PATH: C:\Brunswick\GameConsole\Languages
   Chinese.lang.uni          8/24/2003 3:56:38 PM No Information
   Czech.lang.uni            2/7/2002 6:06:18 PM  No Information
   Dansk.lang.uni            8/24/2003 3:56:42 PM No Information
   Deutsch.lang.uni          8/24/2003 3:56:44 PM No Information
```

Score computers in system: 1

Update Window

Updating Exciter Graphics and Sounds

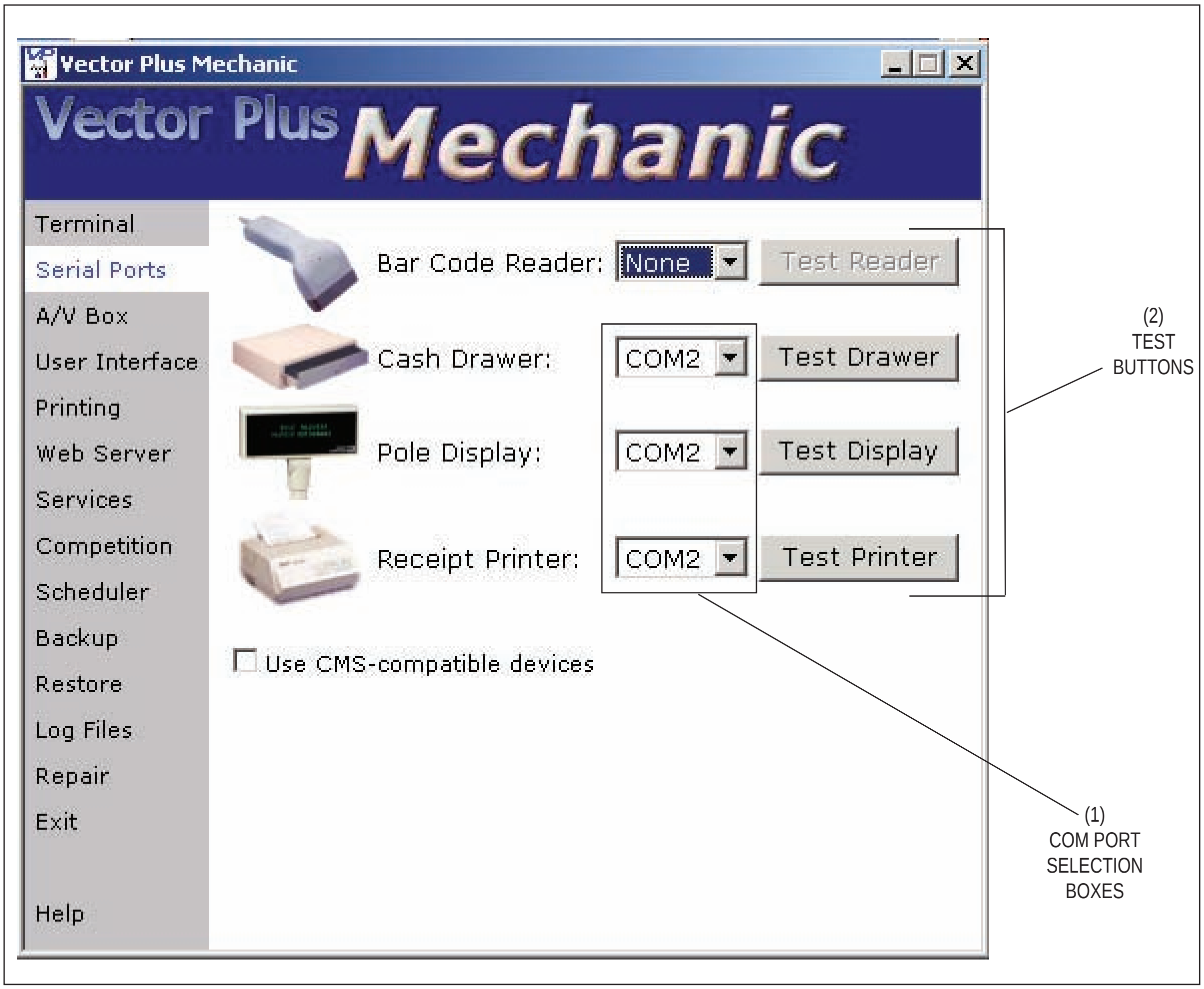
NOTE: *Updating the exciter graphics can also be done using the Media Manager program located on the server.*

1. Select the File menu.
2. Select the Update menu item.
3. Using the drop down menu at the top of the screen, select the scoring computer to be updated, or select “All” to update the software in all of the scoring computers.
4. Select the “Update Multimedia” button.
5. While the exciter graphics and sounds are being updated, the system will display a download status indicator.
6. When completed, select the “OK” button.
7. Follow the steps to reboot the scoring computer or computers that have been updated.

NOTE: *This may process may take 10-15 minutes per scoring computer.*

Vector Plus Mechanic

The Vector Plus Mechanic icon located on the Windows desktop of the server computer, allows Brunswick to configure the Vector Plus system. Most of the settings in the program should only be accessed with the guidance of a Brunswick Tech. Two screens, however, can be useful to the center in verifying the function and cabling to the pole display, cash drawer, receipt printer, and A/V box. Refer to the figures titled *Serial Ports Screen and A/V Box Screen.*


Vector Plus Mechanic
Vector Plus Mechanic
Terminal
Serial Ports
A/V Box
User Interface
Printing
Web Server
Services
Competition
Scheduler
Backup
Restore
Log Files
Repair
Exit
Help
Test Reader
Test Drawer
Test Display
Test Printer
(2)
TEST
BUTTONS
(1)
COM PORT
SELECTION
BOXES

Bar Code Reader: None

Cash Drawer: COM2

Pole Display: COM2

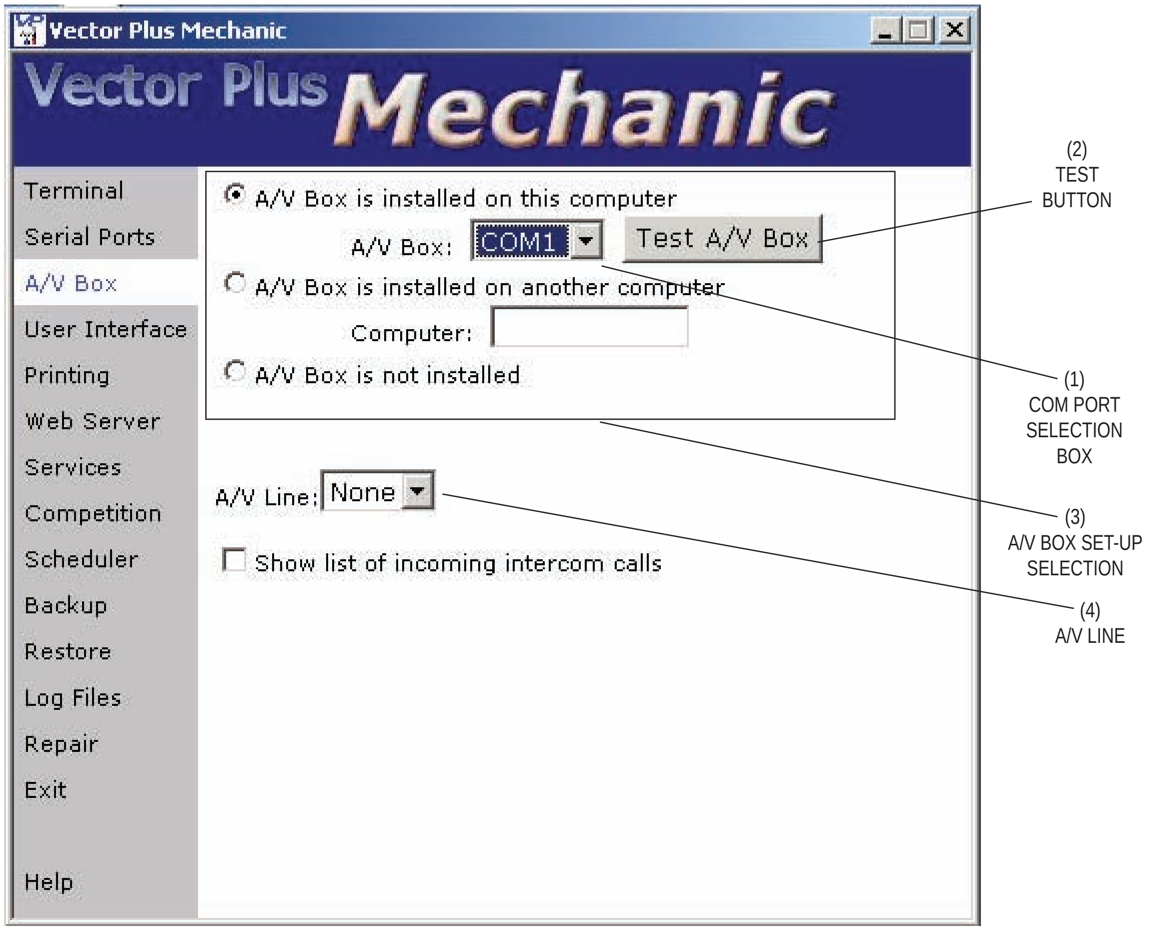
Receipt Printer: COM2

☐ Use CMS-compatible devices

Serial Ports Screen

(1) **Com Port Selection Boxes -** Drop down box used to select the com port assigned to the device. Normally the bar code reader is assigned to Com3, while the cash drawer, pole display, and receipt printer are assigned to Com2.

(2) **Test Buttons -** Click on the appropriate button to check the connection and function of a device. An on-screen message indicates how the device will react.



Vector Plus Mechanic
Vector Plus Mechanic
Terminal
Serial Ports
A/V Box
User Interface
Printing
Web Server
Services
Competition
Scheduler
Backup
Restore
Log Files
Repair
Exit
Help
Test A/V Box
(2)
TEST
BUTTON
(1)
COM PORT
SELECTION
BOX
(3)
A/V BOX SET-UP
SELECTION
(4)
A/V LINE

● A/V Box is installed on this computer

A/V Box: COM1

○ A/V Box is installed on another computer

Computer:

○ A/V Box is not installed

A/V Line: None

☐ Show list of incoming intercom calls

A/V Box Screen

(1) **Com Port Selection Box -** Drop down box used to select the com port assigned to the A/V box when the A/V box is directly attached to the computer. Normally the A/V box is assigned to Com1.

(2) **Test Button -** Click on the button to check the connection and function of the A/V box if it is directly connected to the computer.

(3) **A/V Box Set-up Selection -** This area allows the user to select if an A/V box is used by the terminal and to what computer it is connected.
If the A/V box is attached to a different computer, you must enter the name of the computer in the entry box. (I.E. Client1 , Client2 ..)

(4) **A/V Line -** Drop down box used to select the handset line used by the terminal This number will correspond with the connector number that the handset is attached to at the back of the A/V box. For the Vector system only lines 1 and 2 are active.

DAILY REBOOT PROCEDURE - ALL SYSTEMS

A daily reboot of the system components will cause all software and related computer processes to be closed and restarted, freeing up used resources and allowing the system to operate at peak efficiency. It is suggested that the following reboot procedure be done each morning prior to the start of business.

Reboot Procedure:

1. Scoring computer(s):
   a. If the scoring computers are left on overnight, utilize the restart command in the desk system.
   b. If the scoring computers are turned off overnight, utilize either the Wake-On-Lan feature (if available) or power on the scorers manually via the power button located on each unit.

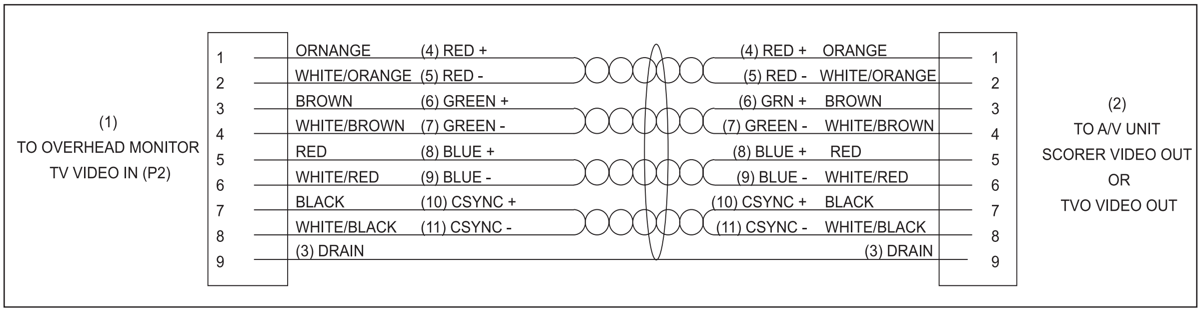
2. Server computer:
   a. Close all running applications on the server. Verify that none of the clients are running the desk software.
   b. Restart the computer using the standard Windows procedure.
   c. Log into Windows to allow all programs to start up as needed.

3. Display Controllers (Vector HD Systems):
   a. If the controllers are left on overnight, utilize the restart command in the desk system.
   b. If the controllers are turned off overnight, utilize either the Wake-On-Lan feature or power the controllers manually via the power button located on each unit.

4. Client computer(s):
   a. If the client(s) are left on overnight, restart the computer using the standard Windows procedure.
   b. If the client(s) are turned off overnight, turn on the unit using the power button on the computer.
   c. If needed turn on the monitor and any other peripherals.

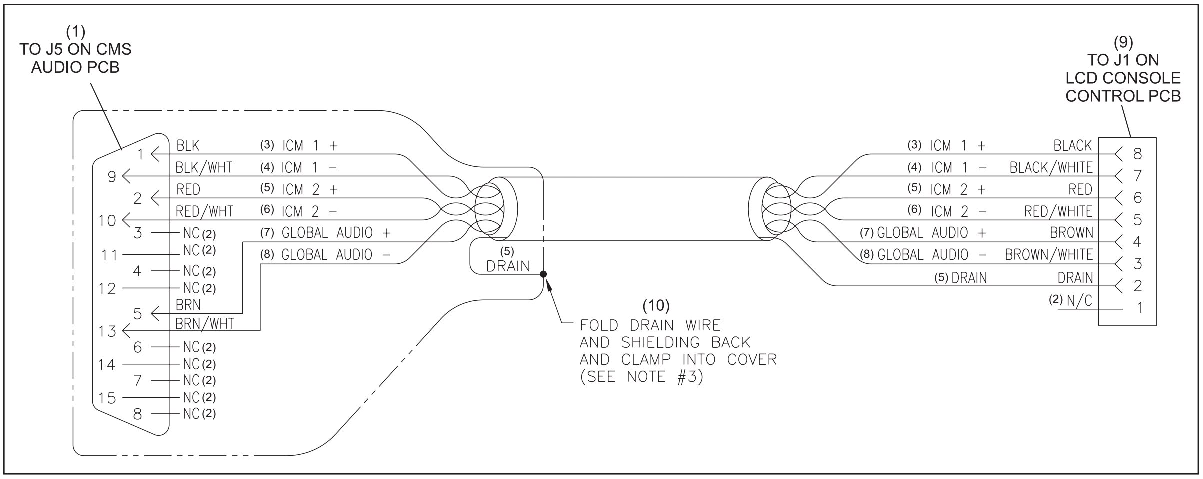
5. Verify system operation:
   a. Open the desk system and verify that communication to the lanes is working.
   b. Turn on the overhead monitors using the desk system if needed.

CABLE DIAGRAMS


(1)
TO OVERHEAD MONITOR
TV VIDEO IN (P2)
1 ORNANGE (4) RED +
2 WHITE/ORANGE (5) RED -
3 BROWN (6) GREEN +
4 WHITE/BROWN (7) GREEN -
5 RED (8) BLUE +
6 WHITE/RED (9) BLUE -
7 BLACK (10) CSYNC +
8 WHITE/BLACK (11) CSYNC -
9 (3) DRAIN
(4) RED + ORANGE 1
(5) RED - WHITE/ORANGE 2
(6) GRN + BROWN 3
(7) GREEN - WHITE/BROWN 4
(8) BLUE + RED 5
(9) BLUE - WHITE/RED 6
(10) CSYNC + BLACK 7
(11) CSYNC - WHITE/BLACK 8
(3) DRAIN 9
(2)
TO A/V UNIT
SCORER VIDEO OUT
OR
TVO VIDEO OUT

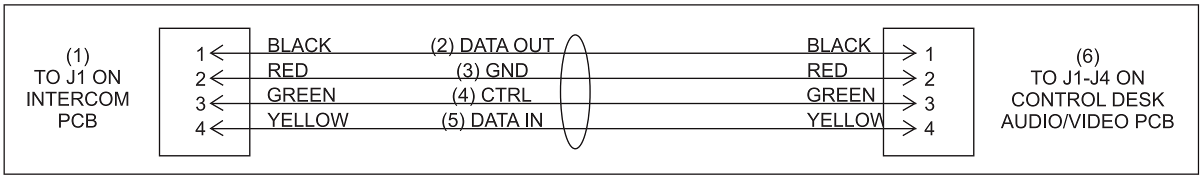
Primary Console Global Video from Control Desk (Part No. 57-300004-000)

(1) TO OVERHEAD MONITOR TV VIDEO IN (P2)
(2) TO AUDIO VIDEO UNIT SCORER VIDEO OUT OR TV ONLY VIDEO OUT
(3) DRAIN
(4) RED +
(5) RED -
(6) GREEN +
(7) GREEN -
(8) BLUE +
(9) BLUE -
(10) COLOR SYNCHRONIZED +
(11) COLOR SYNCHRONIZED -


(1)
TO J5 ON CMS
AUDIO PCB
1 BLK (3) ICM 1 +
9 BLK/WHT (4) ICM 1 −
2 RED (5) ICM 2 +
10 RED/WHT (6) ICM 2 −
3 NC (2) (7) GLOBAL AUDIO +
11 NC (2) (8) GLOBAL AUDIO −
4 NC (2)
12 NC (2)
5 BRN
13 BRN/WHT
6 NC (2)
14 NC (2)
7 NC (2)
15 NC (2)
8 NC (2)
(5)
DRAIN
(10)
FOLD DRAIN WIRE
AND SHIELDING BACK
AND CLAMP INTO COVER
(SEE NOTE #3)
(9)
TO J1 ON
LCD CONSOLE
CONTROL PCB
(3) ICM 1 + BLACK 8
(4) ICM 1 − BLACK/WHITE 7
(5) ICM 2 + RED 6
(6) ICM 2 − RED/WHITE 5
(7) GLOBAL AUDIO + BROWN 4
(8) GLOBAL AUDIO − BROWN/WHITE 3
(5) DRAIN DRAIN 2
(2) N/C 1

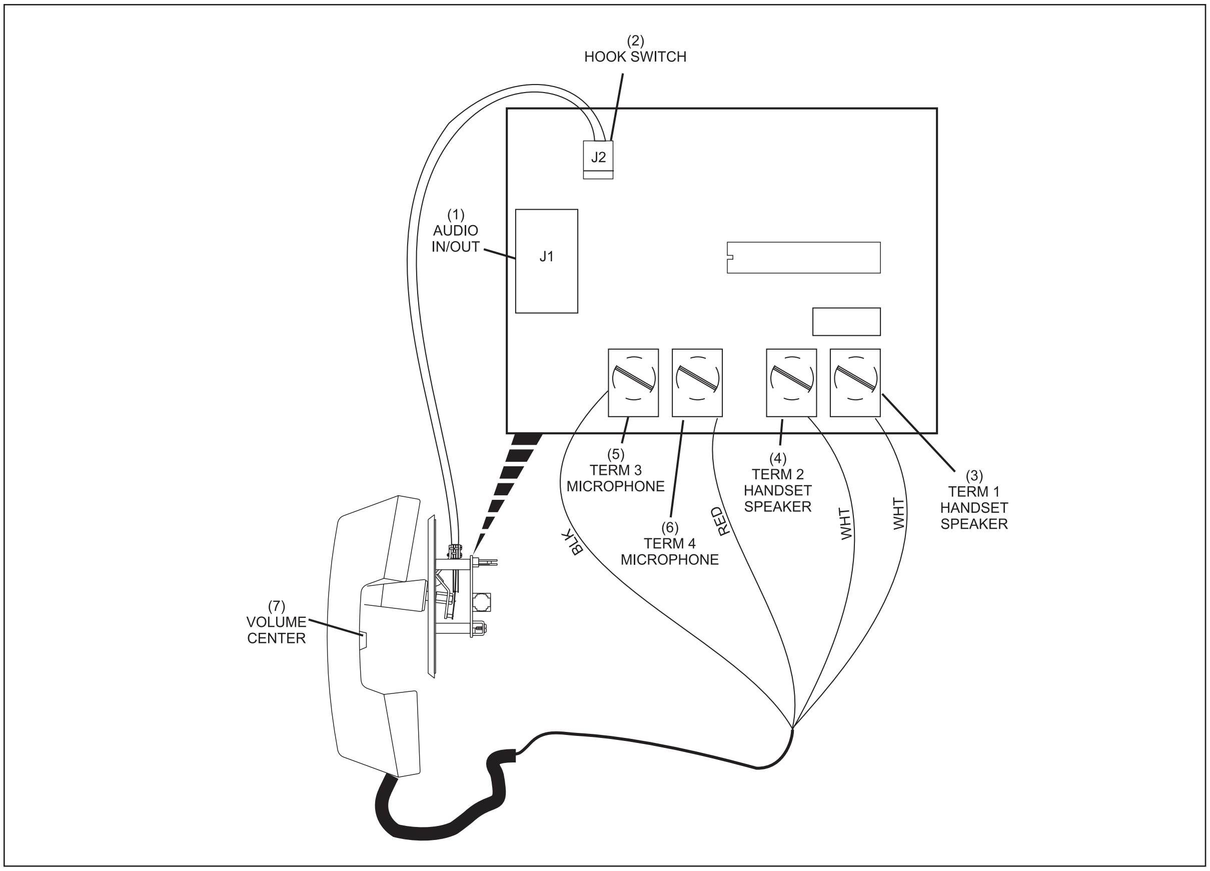
Global Control Desk to First Scorer Audio (Part No. 57-301125-000)

(1) TO J5 ON CMS AUDIO PCB
(2) NO CONNECTION
(3) INTERCOM 1 +
(4) INTERCOM 1 -
(5) INTERCOM 2+
(6) INTERCOM 2-
(7) GLOBAL AUDIO +
(8) GLOBAL AUDIO -
(9) TO JI ON LCD CONSOLE CONTROL PCB
(10) FOLD DRAIN WIRE AND SHIELDING BACK AND CLAMP INTO COVER (SEE NOTE 3)


(1)
TO J1 ON
INTERCOM
PCB
1 BLACK (2) DATA OUT
2 RED (3) GND
3 GREEN (4) CTRL
4 YELLOW (5) DATA IN
BLACK 1
RED 2
GREEN 3
YELLOW 4
(6)
TO J1-J4 ON
CONTROL DESK
AUDIO/VIDEO PCB

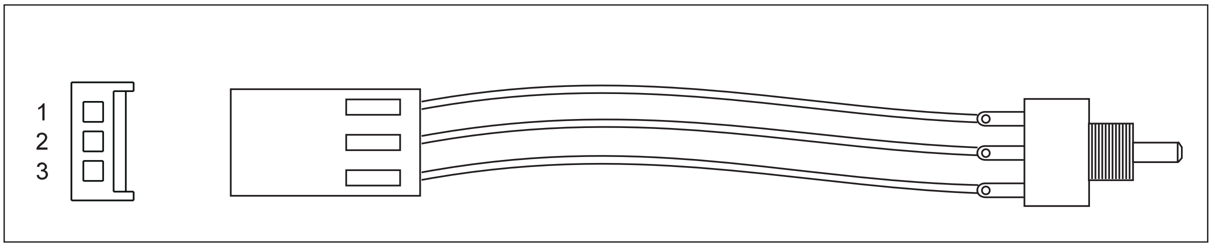
Intercom to Control Desk Audio/Video (Part No. 57-300132-000)

(1) TO J1 ON INTERCOM PCB
(2) DATA OUT
(3) GROUND
(4) CONTROL
(5) DATA IN
(6) TO J1-J4 ON CONTROL DESK AUDIO/VIDEO PCB

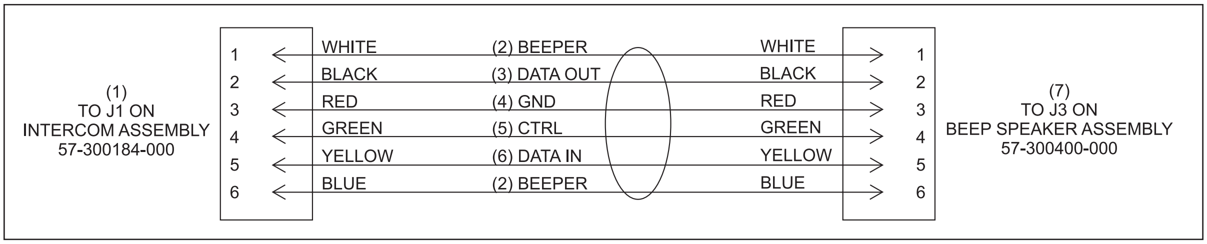

(2)
HOOK SWITCH
J2
(1)
AUDIO
IN/OUT
J1
(5)
TERM 3
MICROPHONE
(6)
TERM 4
MICROPHONE
(4)
TERM 2
HANDSET
SPEAKER
(3)
TERM 1
HANDSET
SPEAKER
BLK
RED
WHT
WHT
(7)
VOLUME
CENTER

Handset Interface PCB (Part No. 57-300183-000)

(1) AUDIO IN/OUT
(2) HOOK SWITCH
(3) TERM 1 HANDSET SPEAKER
(4) TERM 2 HANDSET SPEAKER
(5) TERM 3 MICROPHONE
(6) TERM 4 MICROPHONE
(7) VOLUME CENTER

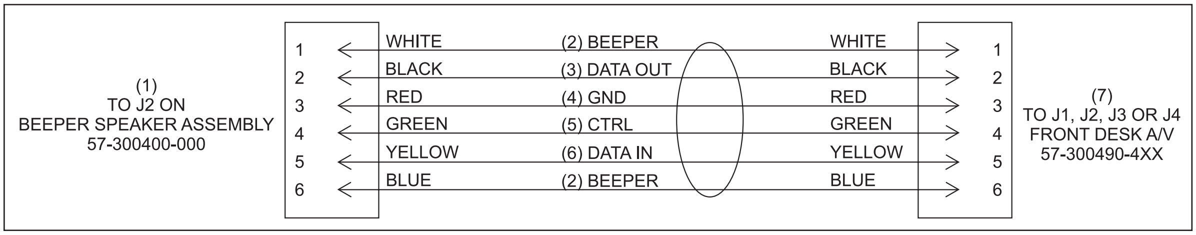


Potentiometer CMS Audio/Video Enclosed (Part No. 57-300306-000)


(1)
TO J1 ON
INTERCOM ASSEMBLY
57-300184-000
1
2
3
4
5
6
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
(2) BEEPER
(3) DATA OUT
(4) GND
(5) CTRL
(6) DATA IN
(2) BEEPER
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
1
2
3
4
5
6
(7)
TO J3 ON
BEEP SPEAKER ASSEMBLY
57-300400-000

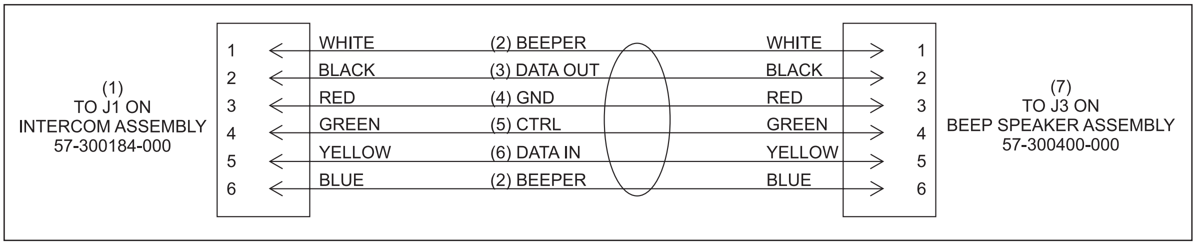
Beep Speaker to Intercom Cable Assembly (Part No. 57-300488-000)

(1) TO J1 ON INTERCOM ASSEMBLY 57-300184-000
(2) BEEPER
(3) DATA OUT
(4) GROUND
(5) CONTROL
(6) DATA IN
(7) TO J3 ON BEEP SPEAKER ASSEMBLY 57-300400-000


(1)
TO J2 ON
BEEPER SPEAKER ASSEMBLY
57-300400-000
1
2
3
4
5
6
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
(2) BEEPER
(3) DATA OUT
(4) GND
(5) CTRL
(6) DATA IN
(2) BEEPER
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
1
2
3
4
5
6
(7)
TO J1, J2, J3 OR J4
FRONT DESK A/V
57-300490-4XX

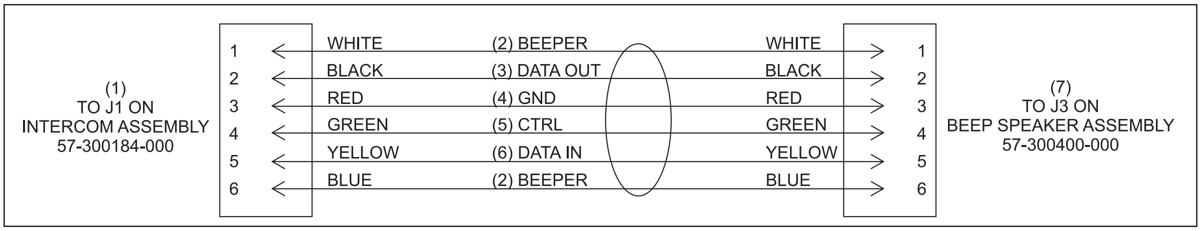
Beep Speaker to Front Desk Audio/Video (F/A) Cable Assembly (Part No. 57-300489-000)

(1) TO J2 ON BEEPER SPEAKER ASSEMBLY 57-300400-000
(2) BEEPER
(3) DATA OUT
(4) GROUND
(5) CONTROL
(6) DATA IN
(7) TO J1, J2, J3 OR J4 FRONT DESK A/V 57-300490-4XX


(1)
TO J1 ON
INTERCOM ASSEMBLY
57-300184-000
1
2
3
4
5
6
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
(2) BEEPER
(3) DATA OUT
(4) GND
(5) CTRL
(6) DATA IN
(2) BEEPER
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
1
2
3
4
5
6
(7)
TO J3 ON
BEEP SPEAKER ASSEMBLY
57-300400-000

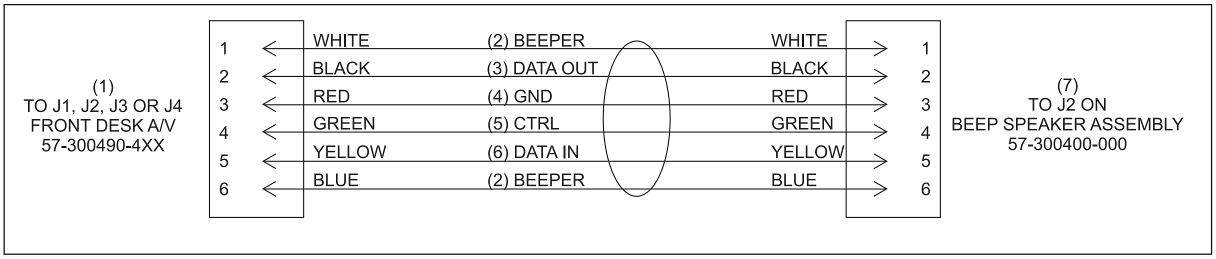
Beep Speaker to Intercom, Short (12 in.) Cable Assembly (Part No. 57-300498-000)

(1) TO J1 ON INTERCOM ASSEMBLY 57-300184-000
(2) BEEPER
(3) DATA OUT
(4) GROUND
(5) CONTROL
(6) DATA IN
(7) TO J3 ON BEEP SPEAKER ASSEMBLY 57-300400-000


(1)
TO J1 ON
INTERCOM ASSEMBLY
57-300184-000
1
2
3
4
5
6
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
(2) BEEPER
(3) DATA OUT
(4) GND
(5) CTRL
(6) DATA IN
(2) BEEPER
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
1
2
3
4
5
6
(7)
TO J3 ON
BEEP SPEAKER ASSEMBLY
57-300400-000

Beep Speaker to Intercom, Long (15 ft.) Cable Assembly (Part No. 57-300499-000)

(1) TO J1 ON INTERCOM ASSEMBLY 57-300184-000
(2) BEEPER
(3) DATA OUT
(4) GROUND
(5) CONTROL
(6) DATA IN
(7) TO J3 ON BEEP SPEAKER ASSEMBLY 57-300400-000


(1)
TO J1, J2, J3 OR J4
FRONT DESK A/V
57-300490-4XX
1
2
3
4
5
6
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
(2) BEEPER
(3) DATA OUT
(4) GND
(5) CTRL
(6) DATA IN
(2) BEEPER
WHITE
BLACK
RED
GREEN
YELLOW
BLUE
1
2
3
4
5
6
(7)
TO J2 ON
BEEP SPEAKER ASSEMBLY
57-300400-000

Beep Speaker to Front Desk A/V (35') Cable Assembly (Part No. 57-300500-000)

(1) TO J1 ON INTERCOM ASSEMBLY 57-300184-000
(2) BEEPER
(3) DATA OUT
(4) GROUND
(5) CONTROL
(6) DATA IN
(7) TO J3 ON BEEP SPEAKER ASSEMBLY 57-300400-000

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INTRODUCTION

The purpose of this troubleshooting guide is to provide fast solutions to problems that a bowling center may experience and give you techniques that you can use to resolve problems not specifically addressed in this guide. Using this guide prior to contacting Brunswick's Technical Support will not only speed your troubleshooting efforts, but will give Brunswick's technicians valuable information should calling Technical Support be necessary.

This guide contains flowcharts to help the mechanic quickly solve common problems that may be encountered. It is assumed that the troubleshooter is familiar with the components and terminology used in the Vector system and the basic operation of a multimeter and cable testers. For additional information about these topics, consult the various sections of this manual or the instruction manual that was sent with the multimeter or tester.

TROUBLESHOOTING TECHNIQUES

Troubleshooting the computers and electronics that make up a scoring system can be a challenging task. The symptoms exhibited by a problem may be a caused by hardware issues such as faulty cabling, damaged circuit boards, or bad connections, it can be attributed to software issues such as improper setup, faulty configuration, or a software glitch, or it can even be a onetime event that causes the problem.

To make matters worse it may be a combination of these things. Despite these seemingly endless possibilities, anyone can troubleshoot if they use a systematic approach and ask the right questions. Without a systematic approach you risk wasting valuable time and resources.

Your approach to the problem is just as important as what you do to diagnose it. The most important thing to remember is to remain calm and take your time. It is not unusual to have your mind flooded with possible causes and solutions. The challenge is take the time to determine which of these ideas make sense. Keep an open mind and explore all possible causes for the problem, but make sure to follow only those possibilities that are related to the problem. If you find yourself getting tired or frustrated, take a break (if possible) and try again later. Finally, don't be stubborn about seeking help if you need it.

Preparation

It is inevitable that something will happen that will require troubleshooting and the setup, replacement, or repair of components in your scoring system. Therefore it is important to prepare for that day. What good is finding the cause of a problem if you don't have the knowledge, equipment, or parts to fix it?

Knowledge

The more you know about your system before problems occur the easier it will be to troubleshoot. You can find specific information in the Vector HD Scoring System Service manual supplied with the system (or download the most recent revision from www.brunswickbowling.com). Related information about computer hardware, software, and networking can be found on the internet or in local bookstores. Either way having the knowledge upfront can save you time later.

Attend seminars or schools related to your equipment. These can be anything from the Brunswick Vector Service School to seminars on computer hardware and troubleshooting.

Another source of information is other mechanics. Their experience may help you understand the system better and give you insight to diagnose problems faster. A few web sites dedicated to bowling center maintenance even include forums through which mechanics can communicate. One word of caution, the information obtained from these types of sources may come from an uniformed or biased person. If necessary, solicit advice from more than one person.

Tools

Using the proper tools will make any job quicker and easier. Therefore, always have the proper tools on hand to correct or diagnose problems should they occur. Knowing what diagnostic tools are available and how to use them is equally important. If necessary, read the users manual that come with the tool and practice how to use it before you actually need it for troubleshooting.

Spare Parts

Verify that you have adequate replacement parts on hand and that they are in good working order. Don't assume that they are functional just because they are new. Get into the habit of rotating your spare circuit boards into your system on a regular schedule. That way when you go to use components from your spare parts, you can be confident that they work.

If possible, pre-configure any components that require setup. This can save valuable time when you are trying to get the system up and running.

Backups

One of the most important (and often most valuable) parts of your system is the information stored on the computer(s). You can save time and reduce frustration if you backup (make a copy) this information. That way if a problem occurs, the solution may be as easy as restoring the computer to a time when it was functioning properly.

TROUBLESHOOTING STEPS

Troubleshooting is not simply finding the cause of a problem and fixing it. Troubleshooting is more properly defined as identifying the specific symptoms, listing the potential causes of the symptoms, and then eliminating these potential causes one by one. In other words troubleshooting is a process of elimination.

Step 1: Identify the Specific Symptoms:

Identifying the specific symptom can be the most difficult part of troubleshooting. Many times you need to rely on second hand information or, at the very least, information that come from an uniformed source. Many times the person providing the information will have a different perspective of the equipment than that of a mechanic or may use different terms to describe the situation. Because of this always verify and clarify what you are told. If you don't, you might be troubleshooting problems that don't exist.

Step 2: Make a List of Potential Causes of the Symptom.

Once you have identified the symptom(s), use your manual, experience, and any other source of information to make a list of things that may have anything, whatsoever, to do with the symptom. Put it on your list even if it may not be a likely culprit.

Step 3: Prioritize Your List

Reorder the list. Put items that are most likely causes at the top and work your way down to the least likely. During this step you should ask questions such as "Has anything changed recently", "Has someone worked on the system", "Has software been updated or re-configured", "Is this and easy or hard thing to check". The answers to these types of questions can influence the position of the items on the list.

Step 4: Eliminate Potential Causes

Try to eliminate the first item on your list. Depending on the item, this can be done by swapping components or cables connections, altering configurations, taking voltage measurement, or by simply observation. Whatever you can safely do eliminate the item as a cause is acceptable. Be as creative as necessary but remember that you don't want to do anything that might damage the system or that you can't undo. IF YOU ARE UNSURE ABOUT SOMETHING: DON'T DO IT. Also remember to properly configure any component that you swap or replace (if required). If the prior steps were done properly, you will eventually get to an item that cannot be eliminated as the cause. Finally, "think big". During the elimination process more you can sometimes eliminate more than one item on your list by troubleshooting complete components or boxes rather than individual components.

Step 5: What to Do if Steps 1 -4 Didn't Solve Your Problem

If after following steps 1 -4 you still have not solved your problem, you need to start again. Verify each step to ensure that good decisions have been made. Talk to others that are knowledgeable about your system. Many times just talking with someone will give you a fresh perspective on things and may give you ideas that weren't considered the first time around.

Additional Tips

Cycling power (powering the unit off, then on) or re-seating a connector or circuit board corrects most problems.

Always verify that a replacement component is actually defective by installing it in another unit.

The simplest solution is normally the correct one and the one most often overlooked.

Try swapping entire assemblies rather than individual components to quickly isolate the location of the problem. For example, if a problem is related to a single scorer computer or lane:

1. Is the problem inside or external to the scorer computer? Swapping the external cables lane to lane will help determine this.

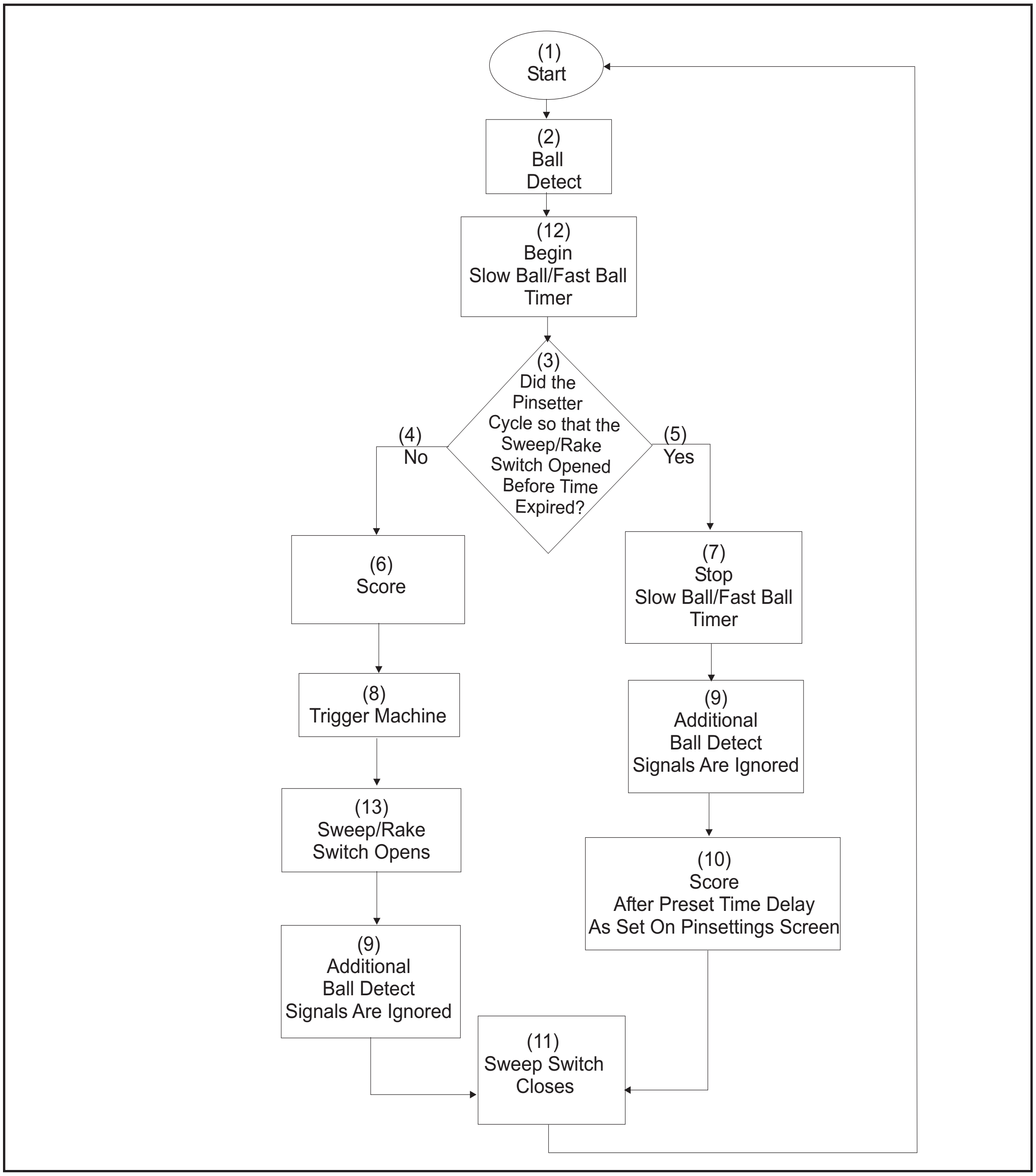
2. If inside the scorer computer, is the problem related to hardware or software? Swap the hard drive to determine if the problem is with software.

SCORING ISSUES

Non- GS Pinsetters

Circuit Description:

Scoring for a non-GS pinsetter involves using a camera to take a picture of the pins, analyzing the picture, and calculating the score based on user specified settings. The scoring for a lane begins when the ball passes through the ball detector beam. If the contacts of sweep/rack switch mounted on the pinsetter are "Open", the Distribution PCB located behind the camera accepts the ball detect signal and begin the scoring process. Refer to figure titled *Non - GS Pinsetter Circuit Description.*


(1) Start
(2) Ball Detect
(12) Begin Slow Ball/Fast Ball Timer
(3) Did the Pinsetter Cycle so that the Sweep/Rake Switch Opened Before Time Expired?
(4) No
(5) Yes
(6) Score
(7) Stop Slow Ball/Fast Ball Timer
(8) Trigger Machine
(9) Additional Ball Detect Signals Are Ignored
(13) Sweep/Rake Switch Opens
(10) Score After Preset Time Delay As Set On Pinsettings Screen
(9) Additional Ball Detect Signals Are Ignored
(11) Sweep Switch Closes

Non - GS Pinsetter Circuit Description

Once the picture is “taken” it is sent to the Video3 PCB where it is analyzed and compared to the calibration parameters set on the Pin Setting Screen.

Typical causes of scoring errors are:

External Influences

1. Pin Condition
2. Excessive reflections in pit area.
3. Improper lighting.

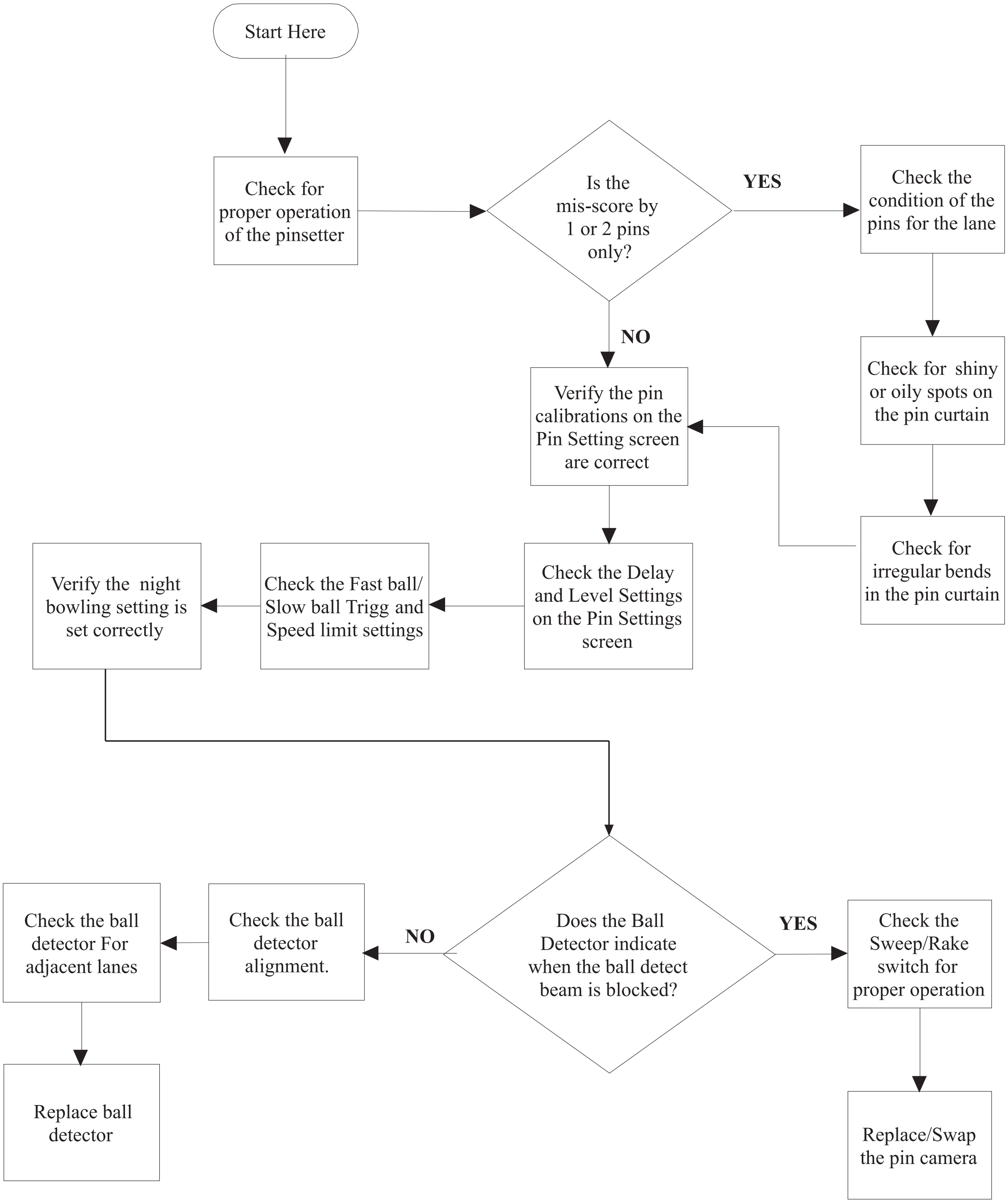
Hardware

1. Camera
2. Distribution PCB
3. Video3 PCB
4. Primary Patch Panel
5. Cabling
6. Ball Detectors
7. Sweep/Rake switch on pinsetter.

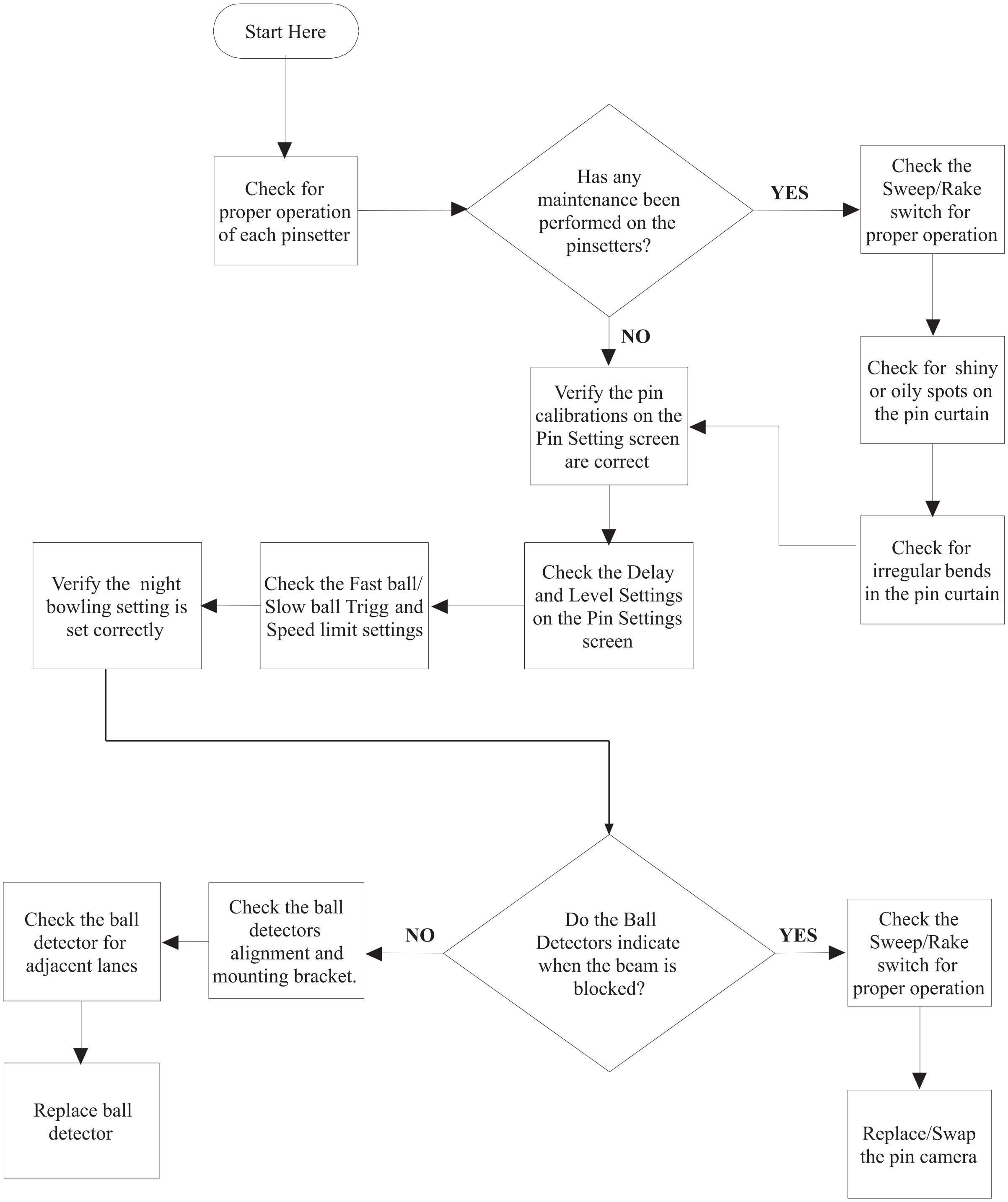
Setup

1. Pin calibration light level setting on the Pin Settings Screen
2. Time Delay settings on the Pin Settings Screen
3. Video3 Contrast adjustment (Usually impacts multiple lanes for a Scorer Computer)
4. Sweep/Rake switch actuator position.
5. Fast ball / Slow ball trigger times, speed limit, or ball speed calibration

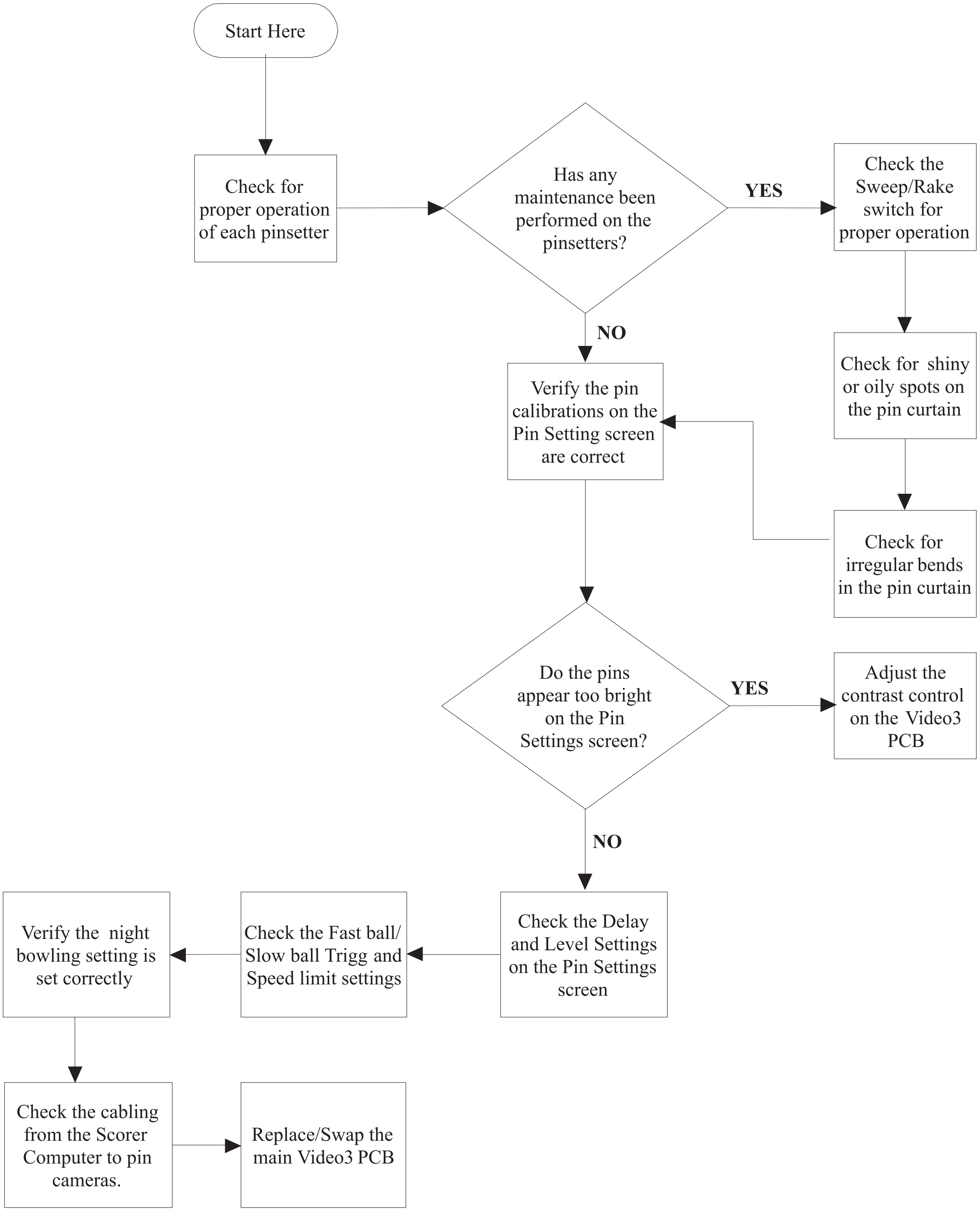
Mis-Scoring on One Lane (Non GS Pinsetter)


Start Here
Check for proper operation of the pinsetter
Is the mis-score by 1 or 2 pins only?
YES
Check the condition of the pins for the lane
Check for shiny or oily spots on the pin curtain
Check for irregular bends in the pin curtain
NO
Verify the pin calibrations on the Pin Setting screen are correct
Check the Delay and Level Settings on the Pin Settings screen
Check the Fast ball/ Slow ball Trigg and Speed limit settings
Verify the night bowling setting is set correctly
Does the Ball Detector indicate when the ball detect beam is blocked?
YES
Check the Sweep/Rake switch for proper operation
Replace/Swap the pin camera
NO
Check the ball detector alignment.
Check the ball detector For adjacent lanes
Replace ball detector

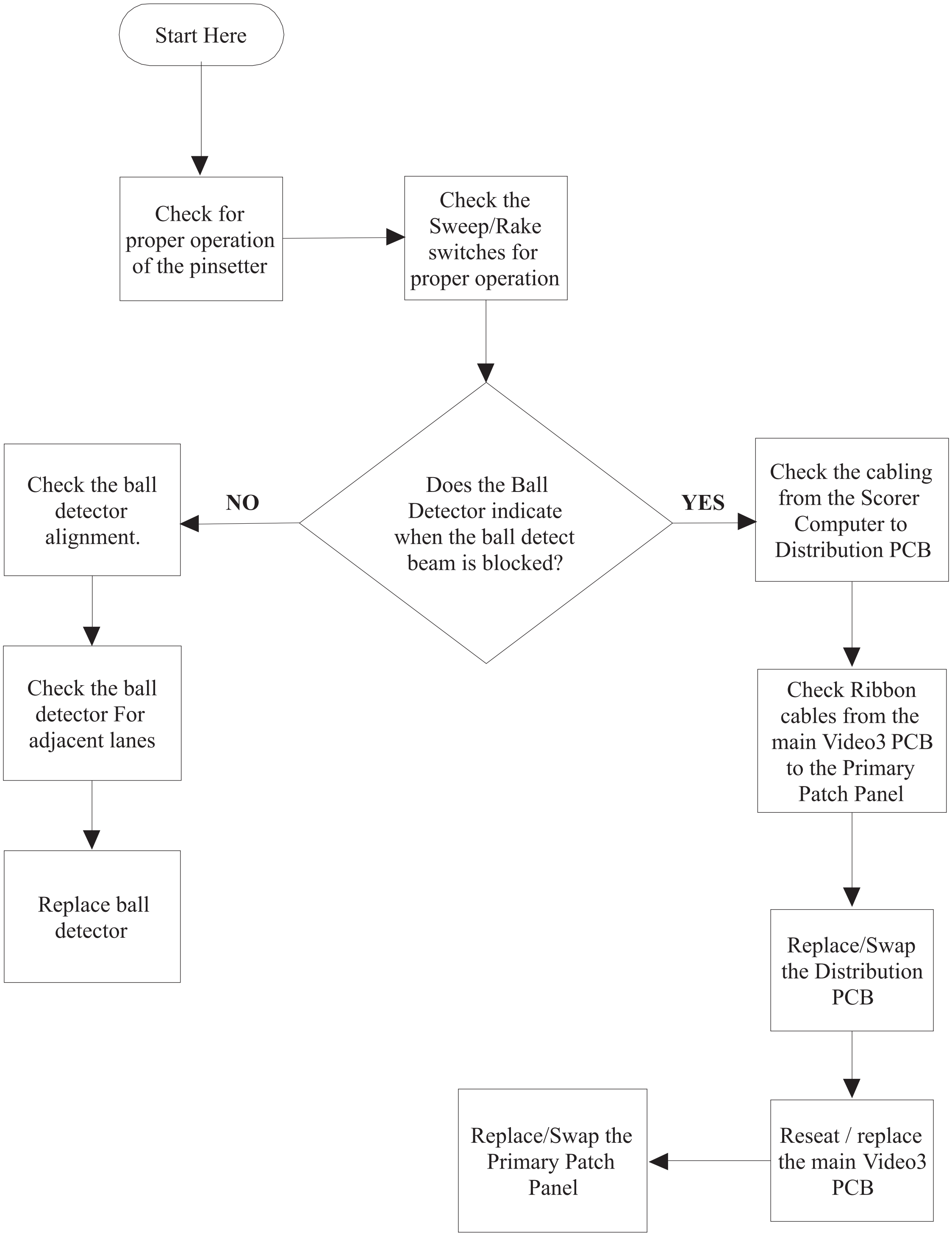
Mis-Scoring on Both Lanes (Non - GS Pinsetters)


Start Here
Check for proper operation of each pinsetter
Has any maintenance been performed on the pinsetters?
YES
Check the Sweep/Rake switch for proper operation
Check for shiny or oily spots on the pin curtain
Check for irregular bends in the pin curtain
NO
Verify the pin calibrations on the Pin Setting screen are correct
Check the Delay and Level Settings on the Pin Settings screen
Check the Fast ball/ Slow ball Trigg and Speed limit settings
Verify the night bowling setting is set correctly
Do the Ball Detectors indicate when the beam is blocked?
NO
Check the ball detectors alignment and mounting bracket.
Check the ball detector for adjacent lanes
Replace ball detector
YES
Check the Sweep/Rake switch for proper operation
Replace/Swap the pin camera

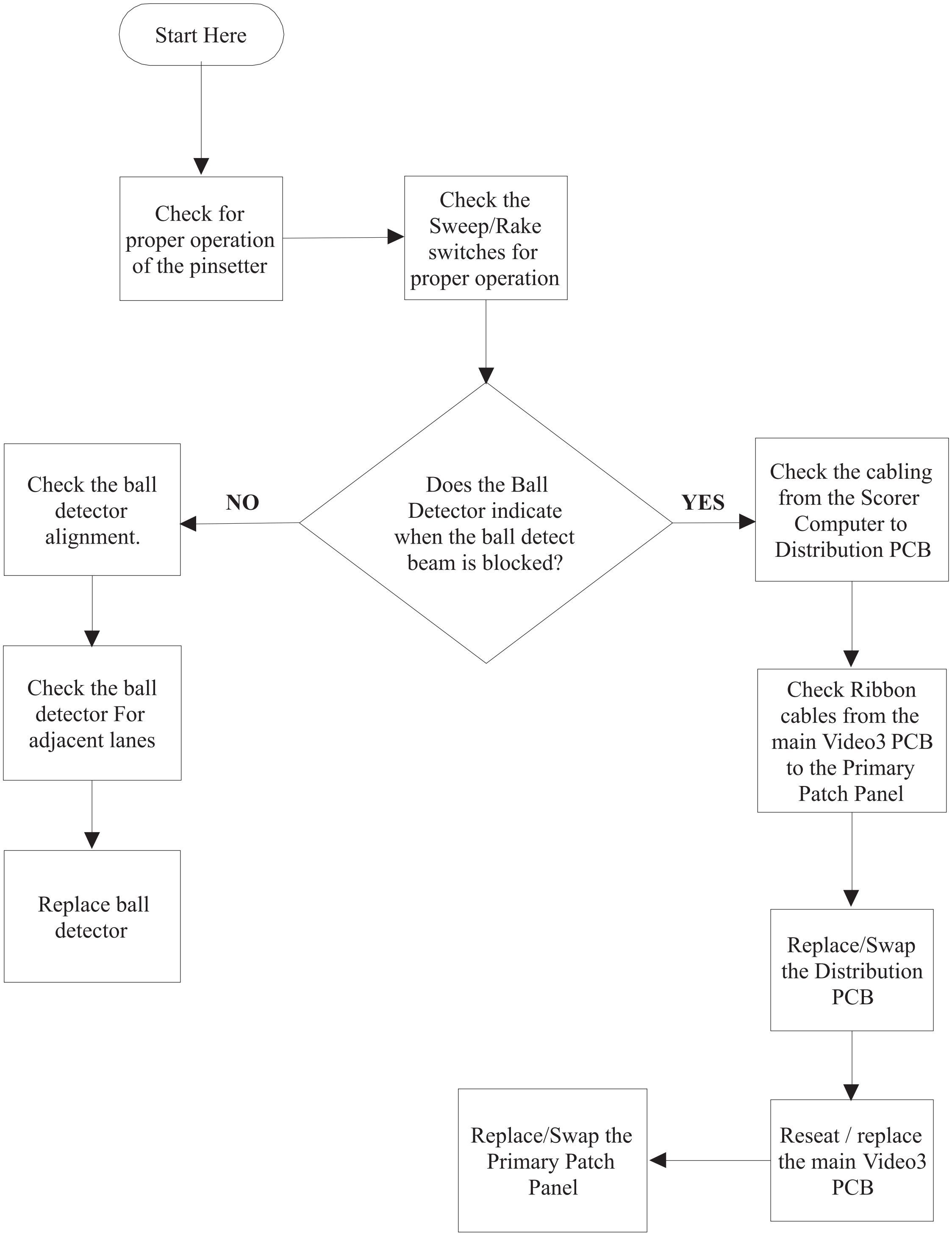
Mis-Scoring on Multliple Lanes (Non - GS)


Start Here
Check for proper operation of each pinsetter
Has any maintenance been performed on the pinsetters?
YES
Check the Sweep/Rake switch for proper operation
Check for shiny or oily spots on the pin curtain
Check for irregular bends in the pin curtain
NO
Verify the pin calibrations on the Pin Setting screen are correct
Do the pins appear too bright on the Pin Settings screen?
YES
Adjust the contrast control on the Video3 PCB
NO
Check the Delay and Level Settings on the Pin Settings screen
Check the Fast ball/ Slow ball Trigg and Speed limit settings
Verify the night bowling setting is set correctly
Check the cabling from the Scorer Computer to pin cameras.
Replace/Swap the main Video3 PCB

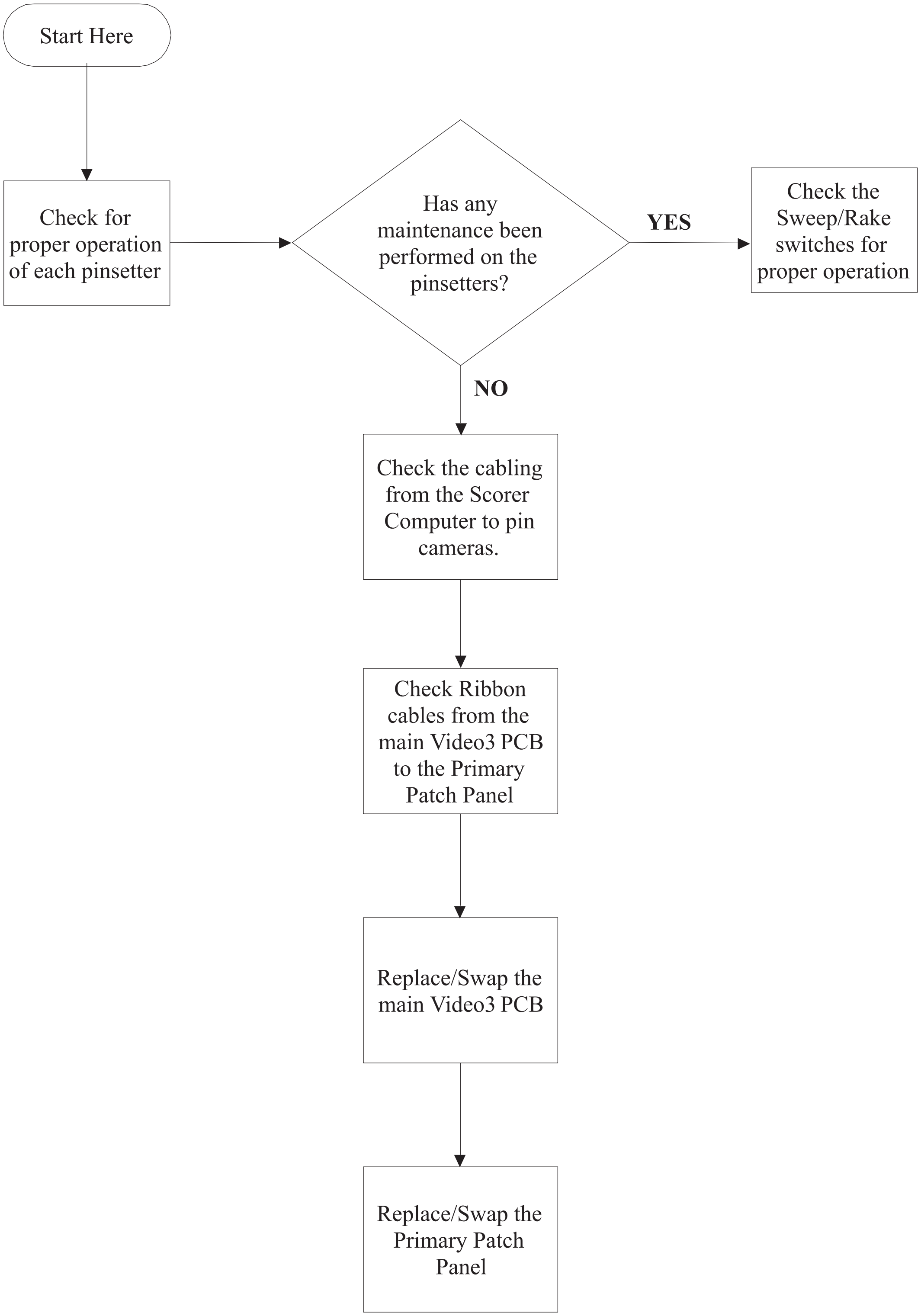
No Scoring on One Lane (Non-GS Pinsetters)


Start Here
Check for proper operation of the pinsetter
Check the Sweep/Rake switches for proper operation
Does the Ball Detector indicate when the ball detect beam is blocked?
NO
YES
Check the ball detector alignment.
Check the ball detector For adjacent lanes
Replace ball detector
Check the cabling from the Scorer Computer to Distribution PCB
Check Ribbon cables from the main Video3 PCB to the Primary Patch Panel
Replace/Swap the Distribution PCB
Reseat / replace the main Video3 PCB
Replace/Swap the Primary Patch Panel

No Scoring on Both Lanes (Non-GS Pinsetter)


Start Here
Check for proper operation of the pinsetter
Check the Sweep/Rake switches for proper operation
Does the Ball Detector indicate when the ball detect beam is blocked?
NO
YES
Check the ball detector alignment.
Check the ball detector For adjacent lanes
Replace ball detector
Check the cabling from the Scorer Computer to Distribution PCB
Check Ribbon cables from the main Video3 PCB to the Primary Patch Panel
Replace/Swap the Distribution PCB
Reseat / replace the main Video3 PCB
Replace/Swap the Primary Patch Panel

No Scores for Multiple Lanes (Non - GS Pinsetters)


Start Here
Check for proper operation of each pinsetter
Has any maintenance been performed on the pinsetters?
YES
Check the Sweep/Rake switches for proper operation
NO
Check the cabling from the Scorer Computer to pin cameras.
Check Ribbon cables from the main Video3 PCB to the Primary Patch Panel
Replace/Swap the main Video3 PCB
Replace/Swap the Primary Patch Panel

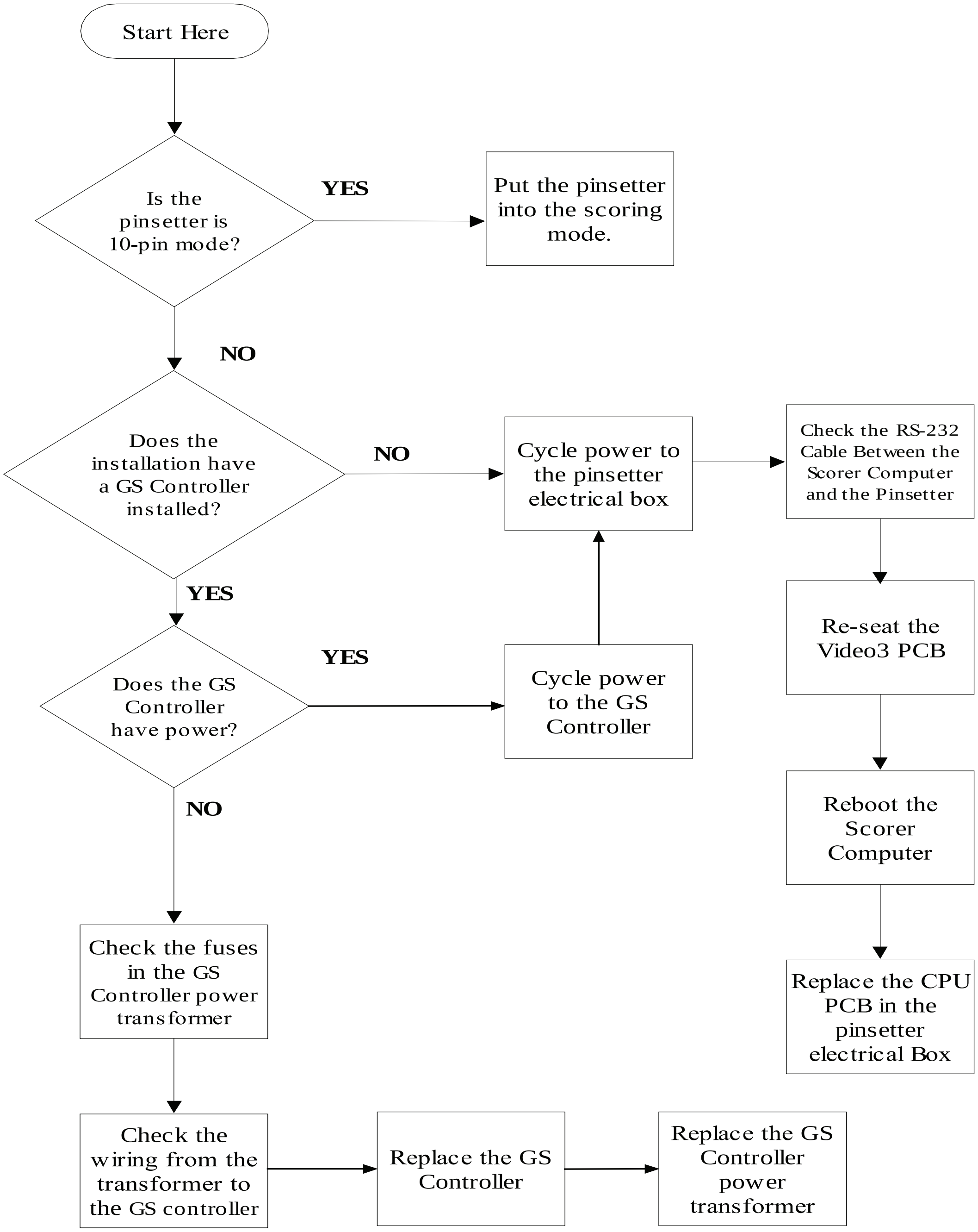
Scoring for all GS-Series pinsetters is generated in the pinsetter's electrical box.

GS Pinsetters

Circuit Description:

Nexgen and later Consolidated electronics connected to the Scorer Computer through an RS-232 converter box. Earlier Consolidated electronics and Universal electronic systems connect to the Scorer Computer via a GS-controller. Typically, if scoring errors occur for a GS-pinsetter, the problem is in the pinholder(s) of the machine, an adjustment to the setting table such as the stroke limiter or table level, or switch cluster timing. Fail to score situations may be attributed to the ball detector, one of the interface boxes, the electronics of the machine, or to the Video3 PCB inside the Scorer Computer.

No Scoring on One Lane or Lane Pair (GS Pinsetters)



Start Here
Is the pinsetter is 10-pin mode?
YES
Put the pinsetter into the scoring mode.
NO
Does the installation have a GS Controller installed?
NO
Cycle power to the pinsetter electrical box
Check the RS-232 Cable Between the Scorer Computer and the Pinsetter
YES
Re-seat the Video3 PCB
YES
Does the GS Controller have power?
Cycle power to the GS Controller
Reboot the Scorer Computer
NO
Check the fuses in the GS Controller power transformer
Replace the CPU PCB in the pinsetter electrical Box
Check the wiring from the transformer to the GS controller
Replace the GS Controller
Replace the GS Controller power transformer

WIDESCREEN OVERHEAD MONITOR ISSUES

Circuit Description:

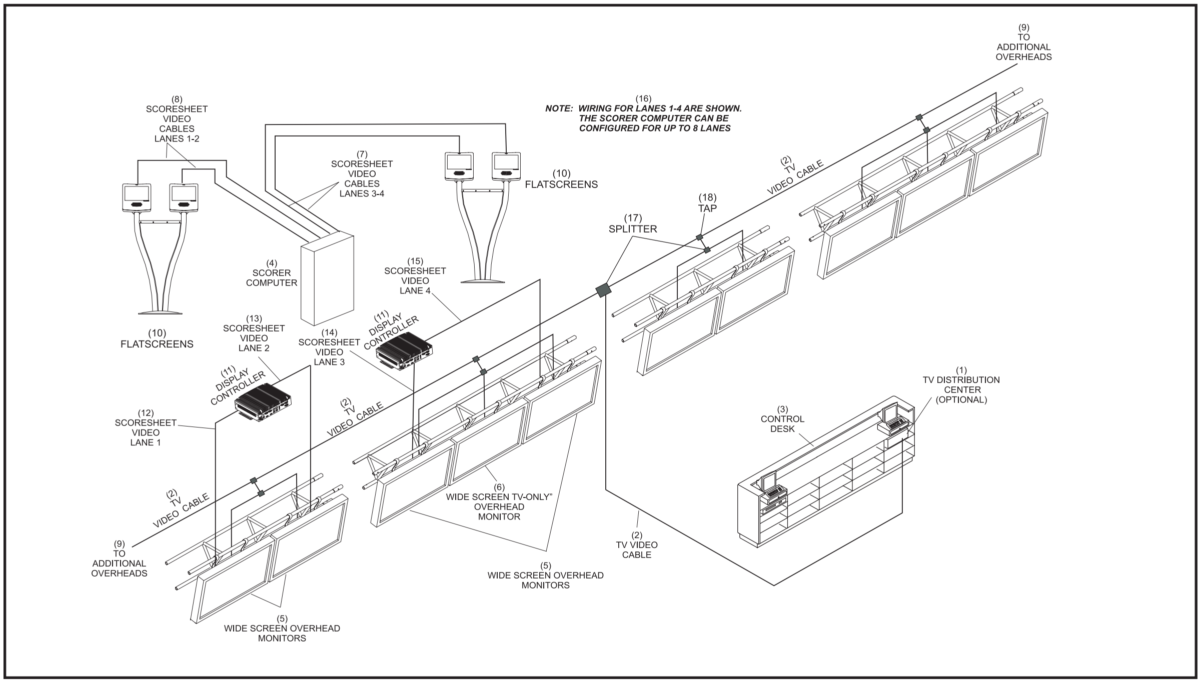
Two types of signals may be sent to the Widescreen overhead monitors, Serial control and video. The video can be sub-divided into an additional two types; scorer video and TV Video (Global Video).

The scorer video is created in the Scorer Computer by the Video3 board and is sent to Display Controllers located behind the left monitor of each lane pair through a networked cat5 cable. The Display Controller then sends the scorer video to its monitors through HDMI cables.

The optional TV Video originates at one or more video source(s) typically located at the control desk. The signal from each source is sent to a modulator located inside the TV Distribution center where they are assigned a “ TV channel”. These channels are combined and sent to the tuners in the overhead monitors through a coaxial cable. Refer to figure titled *Overhead Video Cabling.*

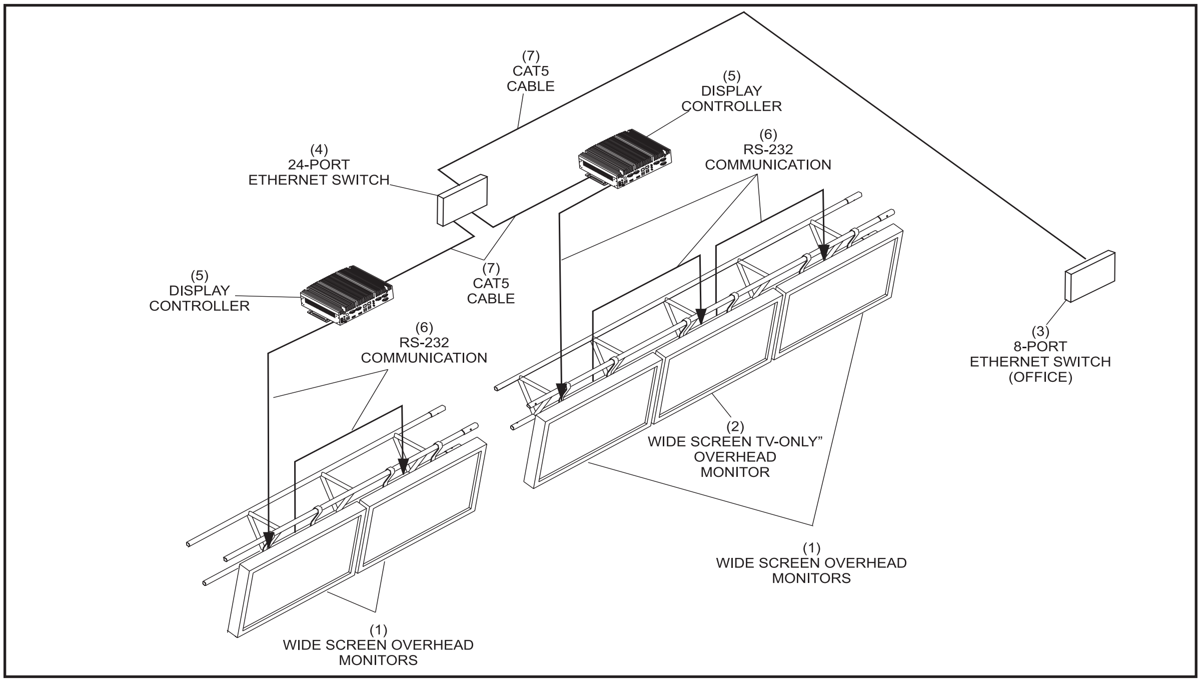
Switching the monitor on/off and between video inputs is handled through an RS232 serial cable routed from the Display Controller to the serial connection located on the monitor. The signal is “daisy chained” to the other monitor(s) that the Display Controller must control. Refer to figure titled *Overhead Control Cabling.*

When troubleshooting video and monitor issues it is important to determine whether the problem is exclusive to one monitor, associated with one Display Controller or if the problem is on more than one lane pair. In addition it is equally important to determine if the problem is in the monitor itself or if it is external. Swapping cable connections between monitors will typically identify where the problem lies.


(9) TO ADDITIONAL OVERHEADS
(8) SCORESHEET VIDEO CABLES LANES 1-2
(16) NOTE: WIRING FOR LANES 1-4 ARE SHOWN. THE SCORER COMPUTER CAN BE CONFIGURED FOR UP TO 8 LANES
(7) SCORESHEET VIDEO CABLES LANES 3-4
(10) FLATSCREENS
(2) TV VIDEO CABLE
(18) TAP
(17) SPLITTER
(4) SCORER COMPUTER
(15) SCORESHEET VIDEO LANE 4
(11) DISPLAY CONTROLLER
(10) FLATSCREENS
(13) SCORESHEET VIDEO LANE 2
(14) SCORESHEET VIDEO LANE 3
(11) DISPLAY CONTROLLER
(1) TV DISTRIBUTION CENTER (OPTIONAL)
(3) CONTROL DESK
(12) SCORESHEET VIDEO LANE 1
(2) TV VIDEO CABLE
(2) TV VIDEO CABLE
(6) WIDE SCREEN TV-ONLY" OVERHEAD MONITOR
(9) TO ADDITIONAL OVERHEADS
(2) TV VIDEO CABLE
(5) WIDE SCREEN OVERHEAD MONITORS
(5) WIDE SCREEN OVERHEAD MONITORS

Overhead Video Cabling.

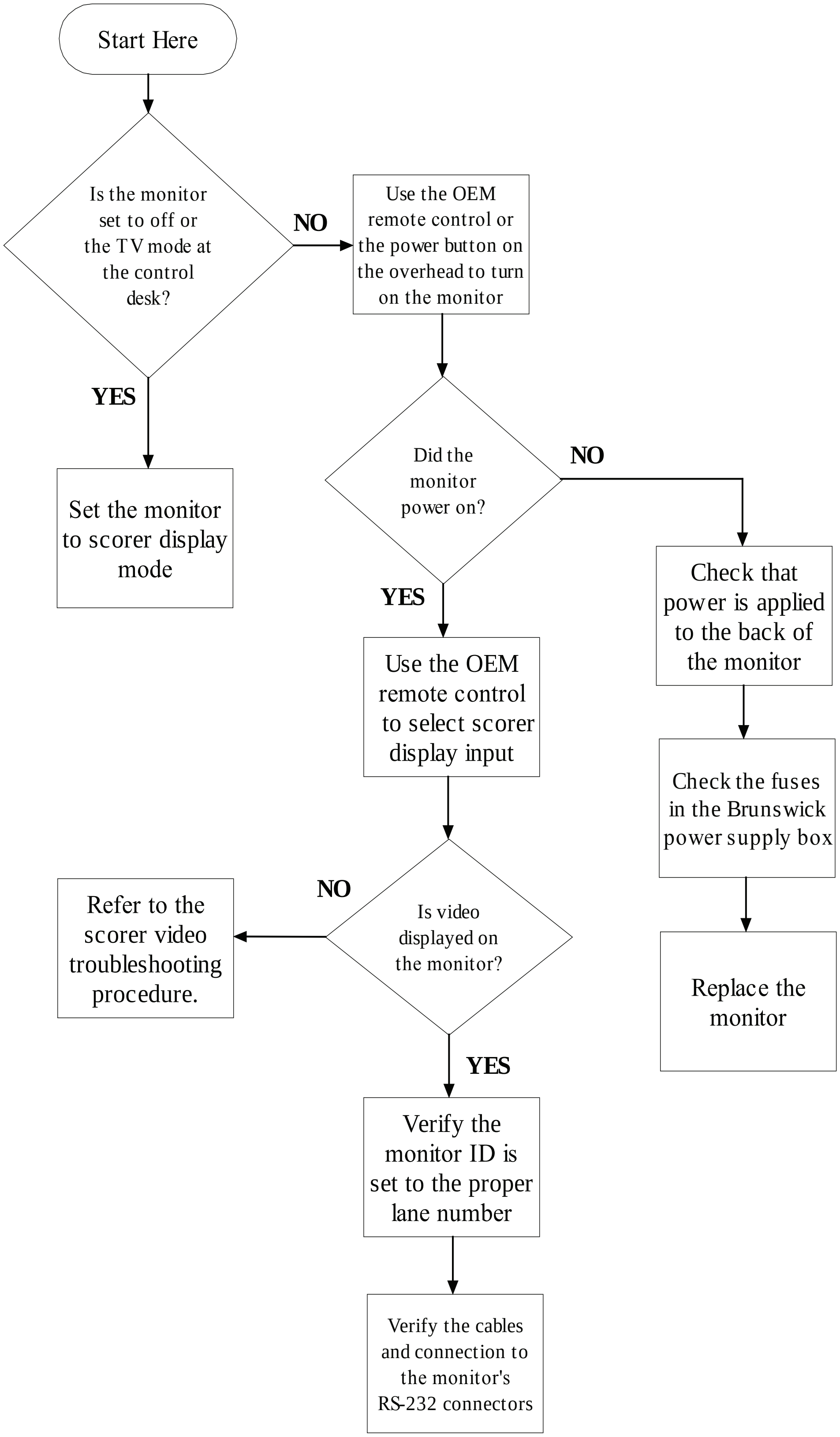
(1) TV DISTRIBUTION CENTER
(2) TV VIDEO CABLE
(3) CONTROL DESK
(4) SCORER COMPUTER
(5) WIDE SCREEN OVERHEADS MONITORS
(6) WIDE SCREEN TV-ONLY OVERHEAD MONITOR
(7) SCORESHEET VIDEO CABLES LANES 3-4
(8) SCORESHEET VIDEO CABLES LANES 1 & 2
(9) TO ADDITIONAL OVERHEADS
(10) FLATSCREENS
(11) DISPLAY CONTROLLERS
(12) SCORESHEET VIDEO LANE 1
(13) SCORESHEET VIDEO LANE 2
(14) SCORESHEET VIDEO LANE 3
(15) SCORESHEET VIDEO LANE 4
(16) WIRING FOR LANES 1-4 ARE SHOWN. THE SCORER COMPUTER CAN BE CONFIGURED FOR UP TO 8 LANE
(12) SPLITTER
(12) TAP


(7) CAT5 CABLE
(5) DISPLAY CONTROLLER
(6) RS-232 COMMUNICATION
(4) 24-PORT ETHERNET SWITCH
(5) DISPLAY CONTROLLER
(7) CAT5 CABLE
(6) RS-232 COMMUNICATION
(3) 8-PORT ETHERNET SWITCH (OFFICE)
(2) WIDE SCREEN TV-ONLY" OVERHEAD MONITOR
(1) WIDE SCREEN OVERHEAD MONITORS
(1) WIDE SCREEN OVERHEAD MONITORS

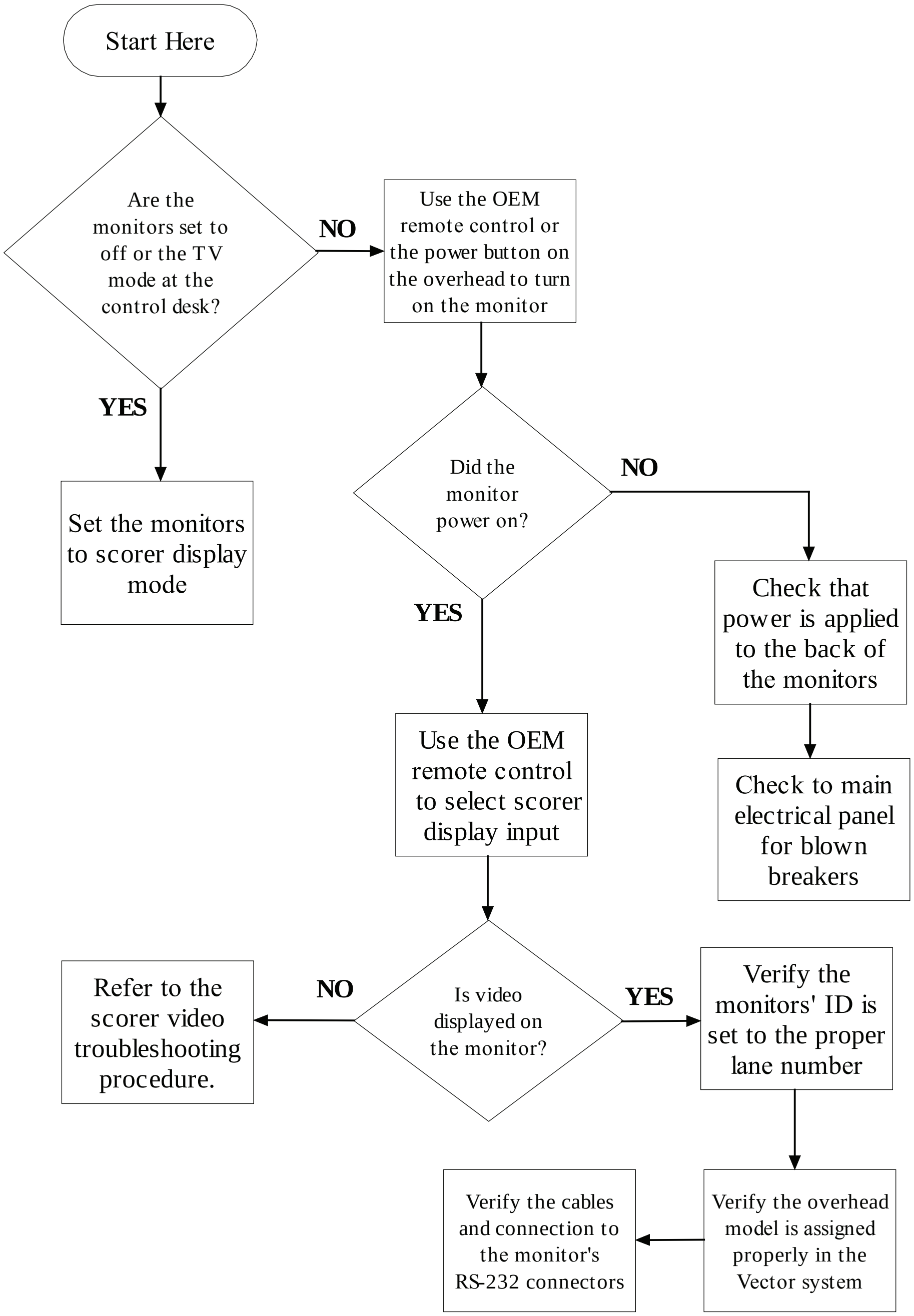
Overhead Control Cabling

(1) WIDE SCREEN OVERHEAD MONITORS
(2) WIDE SCREEN TV-ONLY OVERHEAD MONITORS
(3) 8-PORT ETHERNET SWITCH (OFFICE)
(4) 24-PORT ETHERNET SWITCH
(5) DISPLAY CONTROLLER
(6) RS-232 COMMUNICATION
(7) CAT5 CABLE

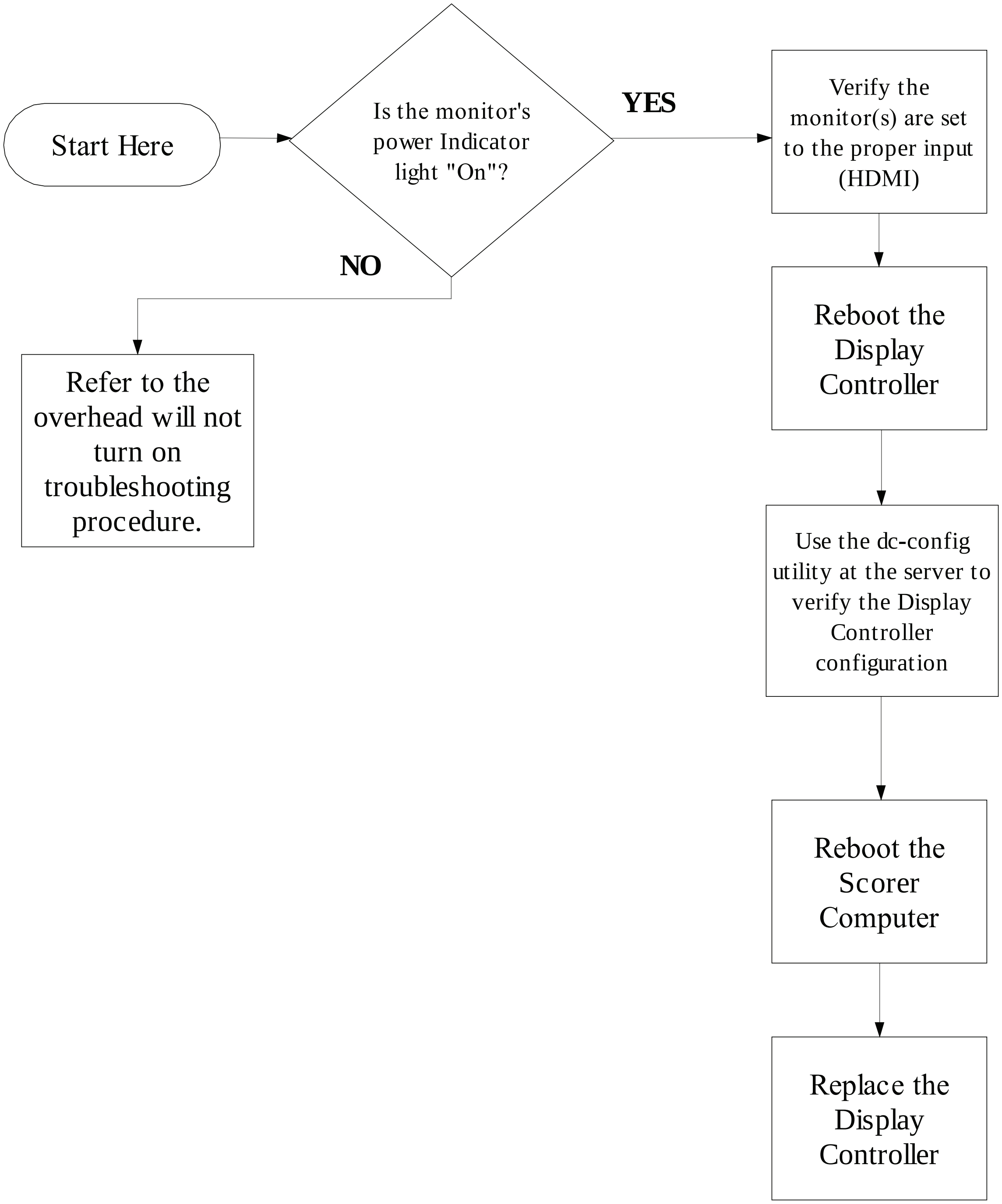
One Widescreen Scorer Overhead Will Not Turn On


Start Here
Is the monitor set to off or the TV mode at the control desk?
NO
Use the OEM remote control or the power button on the overhead to turn on the monitor
YES
Set the monitor to scorer display mode
Did the monitor power on?
NO
Check that power is applied to the back of the monitor
YES
Use the OEM remote control to select scorer display input
Check the fuses in the Brunswick power supply box
NO
Refer to the scorer video troubleshooting procedure.
Is video displayed on the monitor?
Replace the monitor
YES
Verify the monitor ID is set to the proper lane number
Verify the cables and connection to the monitor's RS-232 connectors

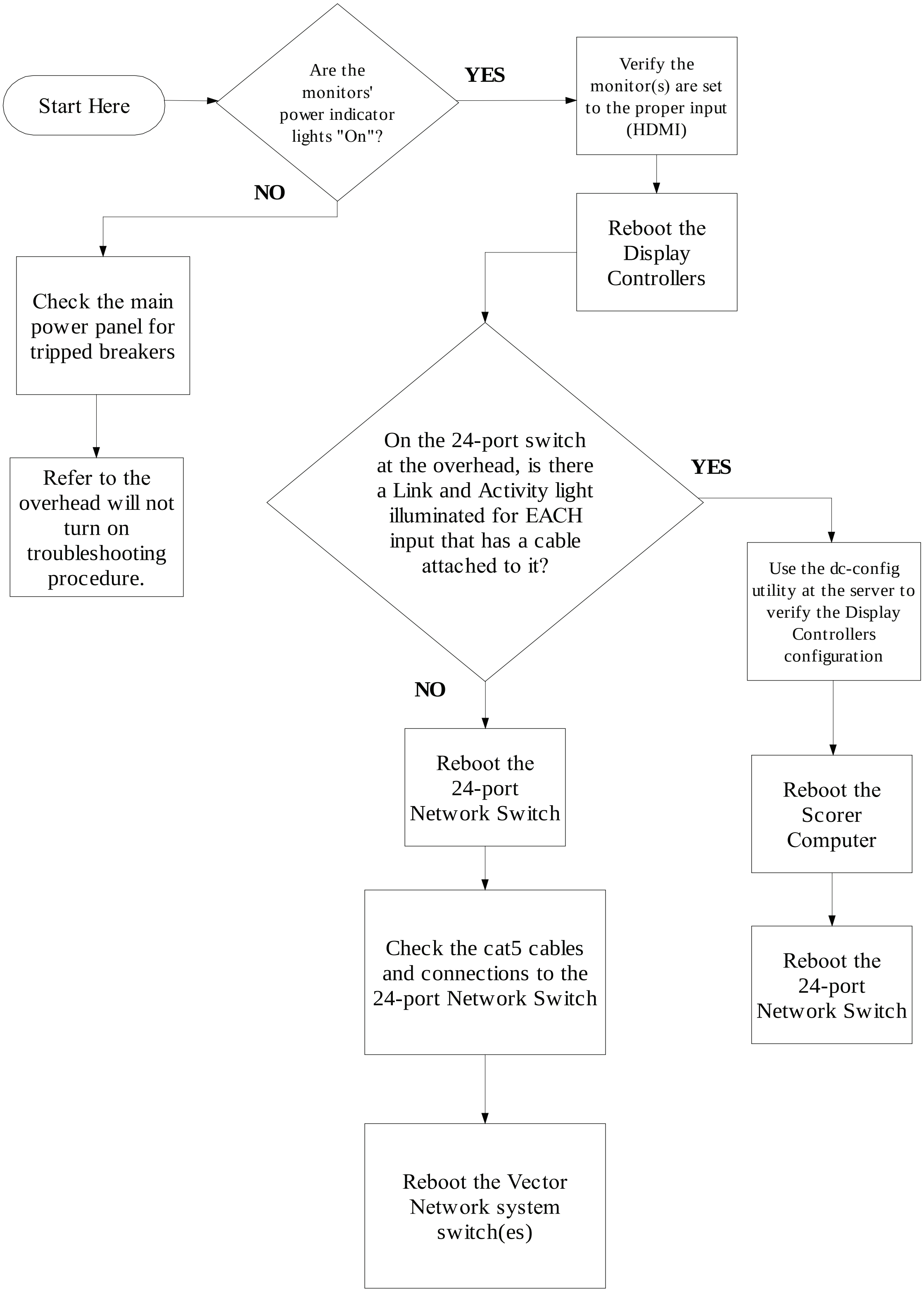
Multiple Widescreen Scorer Overheads Will Not Turn On


Start Here
Are the monitors set to off or the TV mode at the control desk?
NO
Use the OEM remote control or the power button on the overhead to turn on the monitor
YES
Set the monitors to scorer display mode
Did the monitor power on?
NO
Check that power is applied to the back of the monitors
YES
Use the OEM remote control to select scorer display input
Check to main electrical panel for blown breakers
Refer to the scorer video troubleshooting procedure.
NO
Is video displayed on the monitor?
YES
Verify the monitors' ID is set to the proper lane number
Verify the cables and connection to the monitor's RS-232 connectors
Verify the overhead model is assigned properly in the Vector system

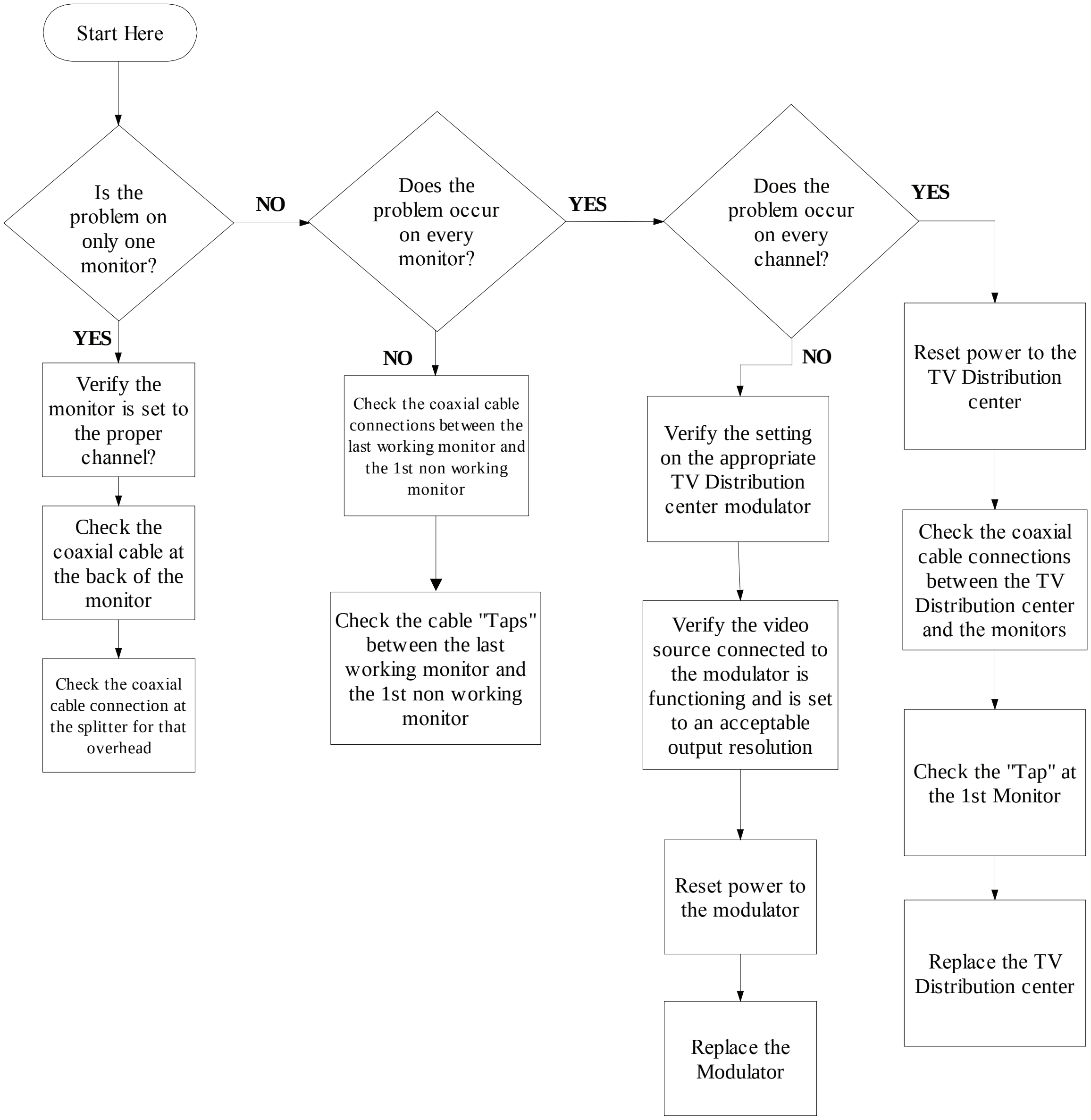
No Scorer Video on One or Both Widescreen Monitor on a Lane Pair


Start Here
Is the monitor's power Indicator light "On"?
YES
NO
Verify the monitor(s) are set to the proper input (HDMI)
Reboot the Display Controller
Use the dc-config utility at the server to verify the Display Controller configuration
Reboot the Scorer Computer
Replace the Display Controller
Refer to the overhead will not turn on troubleshooting procedure.

No Scorer Video on Multiple Widescreen Monitors


Start Here
Are the monitors' power indicator lights "On"?
YES
Verify the monitor(s) are set to the proper input (HDMI)
NO
Check the main power panel for tripped breakers
Refer to the overhead will not turn on troubleshooting procedure.
Reboot the Display Controllers
On the 24-port switch at the overhead, is there a Link and Activity light illuminated for EACH input that has a cable attached to it?
YES
Use the dc-config utility at the server to verify the Display Controllers configuration
NO
Reboot the 24-port Network Switch
Reboot the Scorer Computer
Check the cat5 cables and connections to the 24-port Network Switch
Reboot the 24-port Network Switch
Reboot the Vector Network system switch(es)

The TV Picture on Multiple Monitors is Bad


Start Here
Is the problem on only one monitor?
YES
Verify the monitor is set to the proper channel?
Check the coaxial cable at the back of the monitor
Check the coaxial cable connection at the splitter for that overhead
NO
Does the problem occur on every monitor?
NO
Check the coaxial cable connections between the last working monitor and the 1st non working monitor
Check the cable "Taps" between the last working monitor and the 1st non working monitor
YES
Does the problem occur on every channel?
NO
Verify the setting on the appropriate TV Distribution center modulator
Verify the video source connected to the modulator is functioning and is set to an acceptable output resolution
Reset power to the modulator
Replace the Modulator
YES
Reset power to the TV Distribution center
Check the coaxial cable connections between the TV Distribution center and the monitors
Check the "Tap" at the 1st Monitor
Replace the TV Distribution center

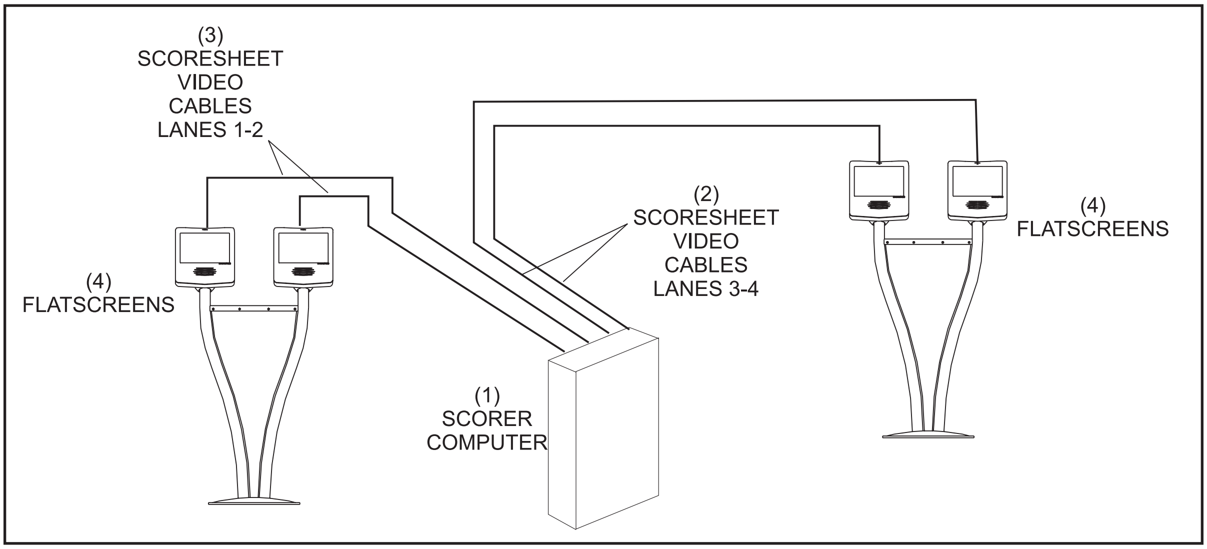
LOWER LCD DISPLAY ISSUES

Circuit Description:

Scorer video for lower screens is produced by a second Video3 PCB installed in the Scorer Computer. The LCD Interface PCB converts the video so that it can be displayed by the LCD screens. The video is sent to the lower screens through the Secondary Patch Panel. The scorer video cables are exclusive to the monitor it attaches to. Refer to figures titled *Lower Flatscreen Video Routing* and *Lower Flatscreen Wiring* .

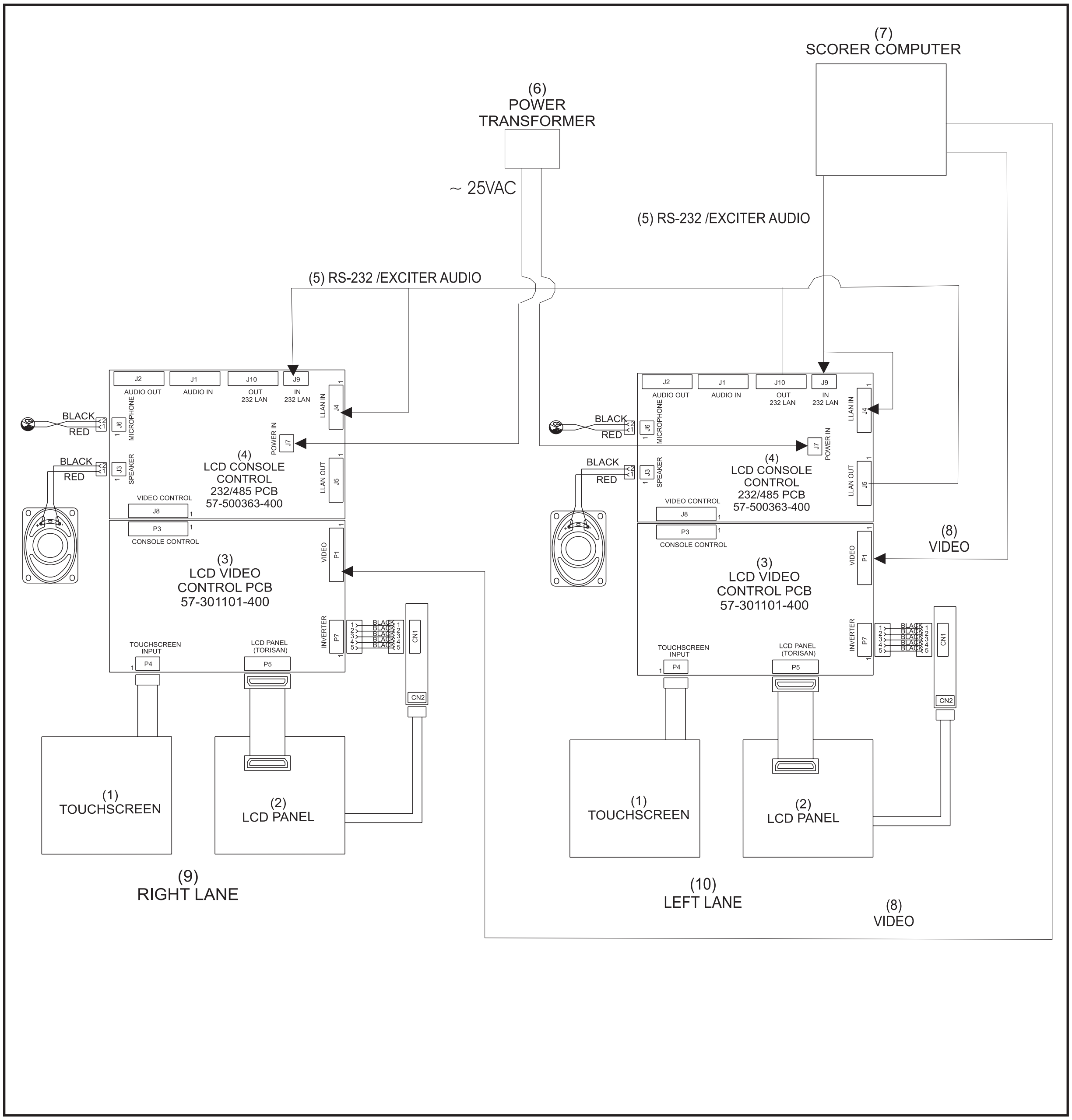
When troubleshooting lower video issues it is important to determine whether the problem is exclusive to one screen or if the problem is on more than one.

In addition it is equally important to determine if the problem is in the screen or if it is external. Swapping the video cable connections at the Scorer Computer between lanes will typically identify where the problem lies.


(3)
SCORESHEET
VIDEO
CABLES
LANES 1-2
(2)
SCORESHEET
VIDEO
CABLES
LANES 3-4
(4)
FLATSCREENS
(4)
FLATSCREENS
(1)
SCORER
COMPUTER

Lower Flatscreen Video Routing

(1) SCORER COMPUTER	(2) SCORESHEET VIDEO CABLES LANES 3-4	(3) SCORESHEET VIDEO CABLES LANES 1-2
(4) FLATSCREENS		


(7)
SCORER COMPUTER
(6)
POWER
TRANSFORMER
~ 25VAC
(5) RS-232 /EXCITER AUDIO
(5) RS-232 /EXCITER AUDIO
J2
AUDIO OUT
J1
AUDIO IN
J10
OUT
232 LAN
J9
IN
232 LAN
LLAN IN
J4
BLACK
RED
J6
MICROPHONE
POWER IN
J7
BLACK
RED
J3
SPEAKER
(4)
LCD CONSOLE
CONTROL
232/485 PCB
57-500363-400
LLAN OUT
J5
VIDEO CONTROL
J8
P3
CONSOLE CONTROL
VIDEO
P1
(3)
LCD VIDEO
CONTROL PCB
57-301101-400
INVERTER
P7
BLACK
CN1
CN2
TOUCHSCREEN
INPUT
P4
LCD PANEL
(TORISAN)
P5
(1)
TOUCHSCREEN
(2)
LCD PANEL
(9)
RIGHT LANE
(10)
LEFT LANE
(8)
VIDEO
(8)
VIDEO

Lower Flatscreen Wiring

(1) TOUCHSCREEN

(2) LCD PANEL

(3) LCD VIDEO CONTROL PCB 57-301101-400

(4) LCD CONSOLE CONTROL RS232/485 PCB 57-500363-400

(5) RS-232/EXCITER AUDIO

(6) POWER TRANSFORMER

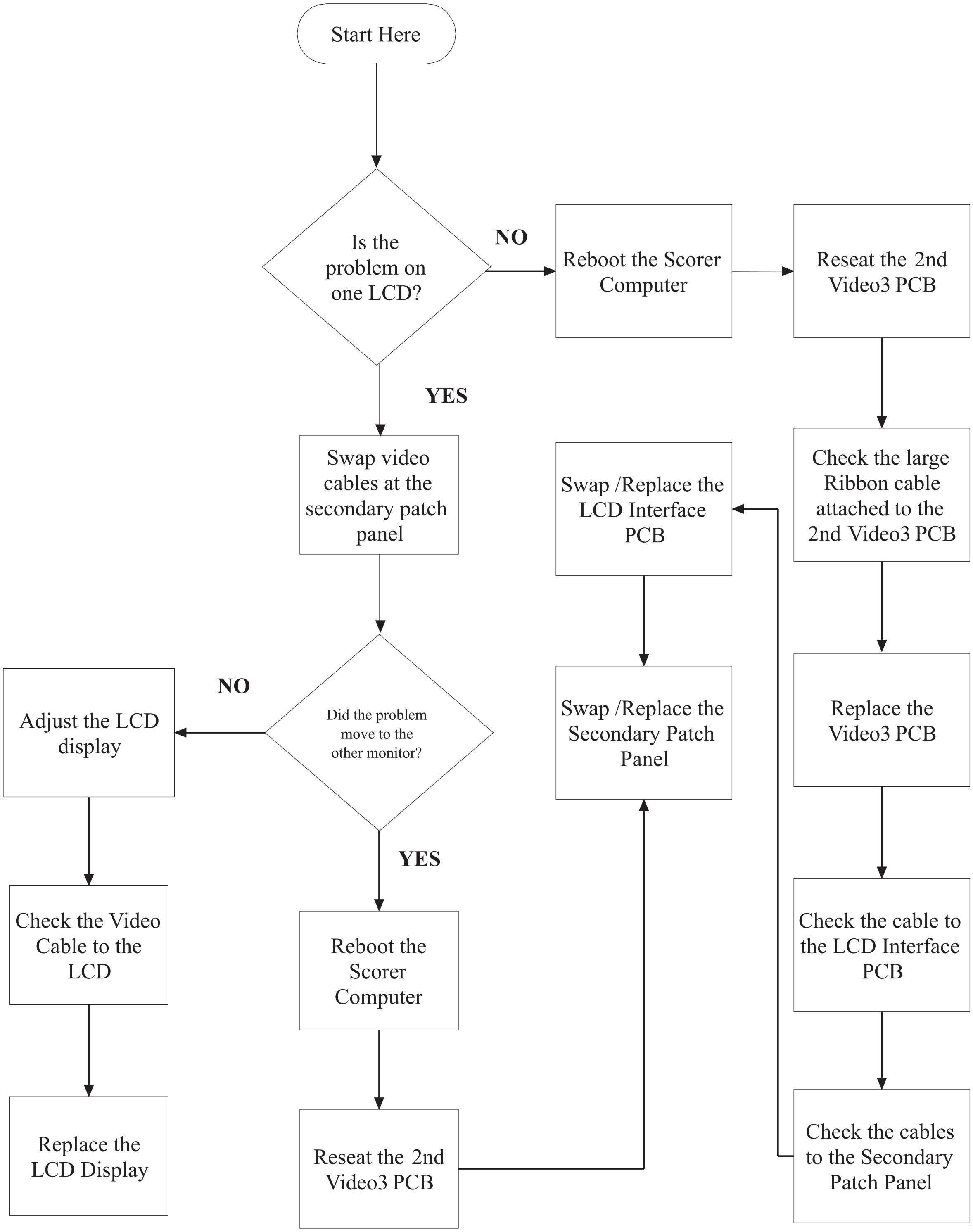
(7) SCORER COMPUTER

(8) VIDEO

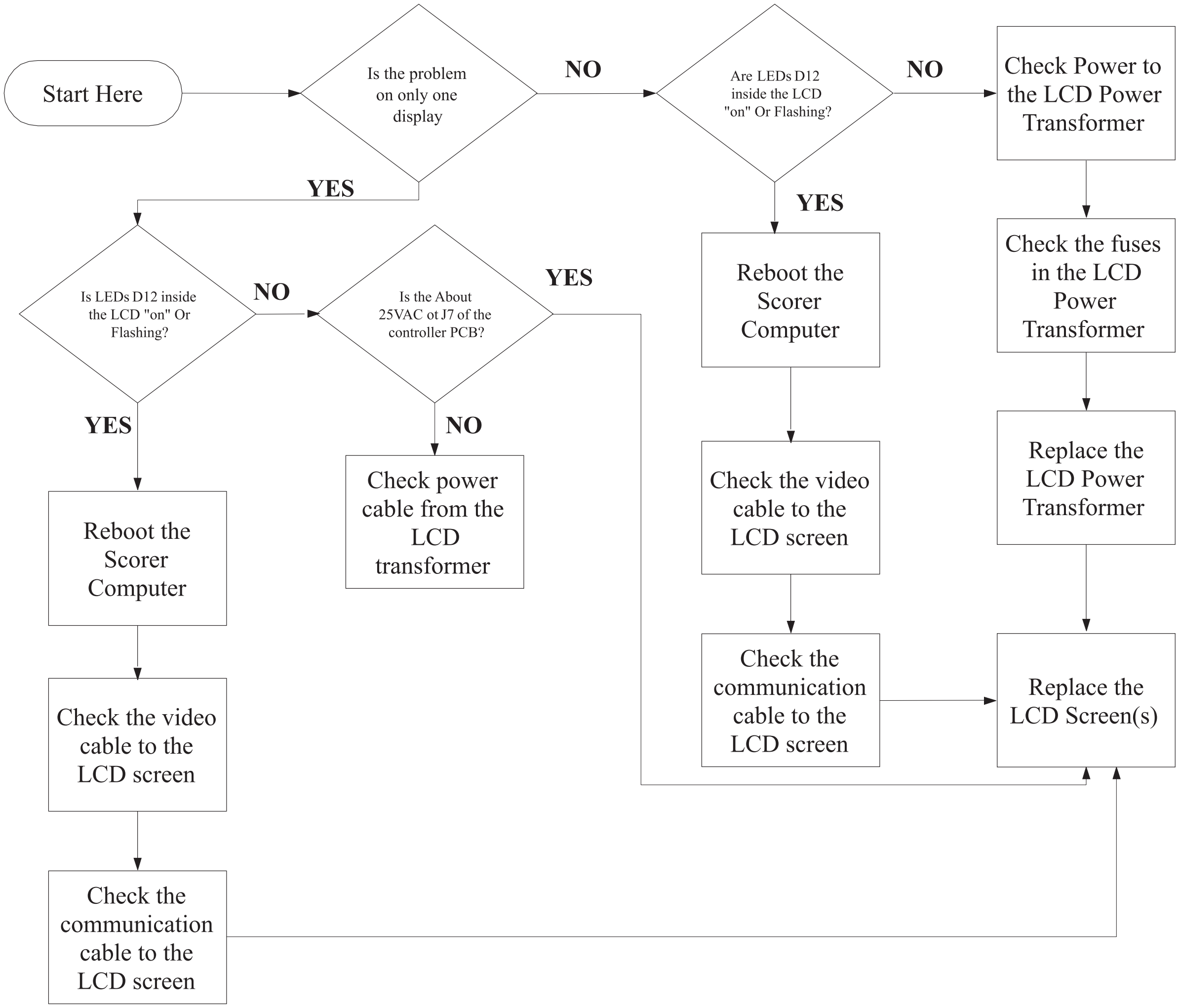
(9) RIGHT LANE

(10) LEFT LANE

The Picture on Lower LCD Touch Screen is Bad


Start Here
Is the problem on one LCD?
NO
Reboot the Scorer Computer
Reseat the 2nd Video3 PCB
YES
Swap video cables at the secondary patch panel
Swap /Replace the LCD Interface PCB
Check the large Ribbon cable attached to the 2nd Video3 PCB
NO
Adjust the LCD display
Did the problem move to the other monitor?
Swap /Replace the Secondary Patch Panel
Replace the Video3 PCB
YES
Check the Video Cable to the LCD
Reboot the Scorer Computer
Check the cable to the LCD Interface PCB
Replace the LCD Display
Reseat the 2nd Video3 PCB
Check the cables to the Secondary Patch Panel

Lower LCD Touch Screen(s) Will Not Turn On


Start Here
Is the problem on only one display
NO
Are LEDs D12 inside the LCD "on" Or Flashing?
NO
Check Power to the LCD Power Transformer
YES
YES
Is LEDs D12 inside the LCD "on" Or Flashing?
NO
Is the About 25VAC ot J7 of the controller PCB?
YES
Reboot the Scorer Computer
Check the fuses in the LCD Power Transformer
YES
NO
Reboot the Scorer Computer
Check power cable from the LCD transformer
Check the video cable to the LCD screen
Replace the LCD Power Transformer
Check the communication cable to the LCD screen
Replace the LCD Screen(s)
Check the video cable to the LCD screen
Check the communication cable to the LCD screen

CONSOLE INPUT PROBLEMS

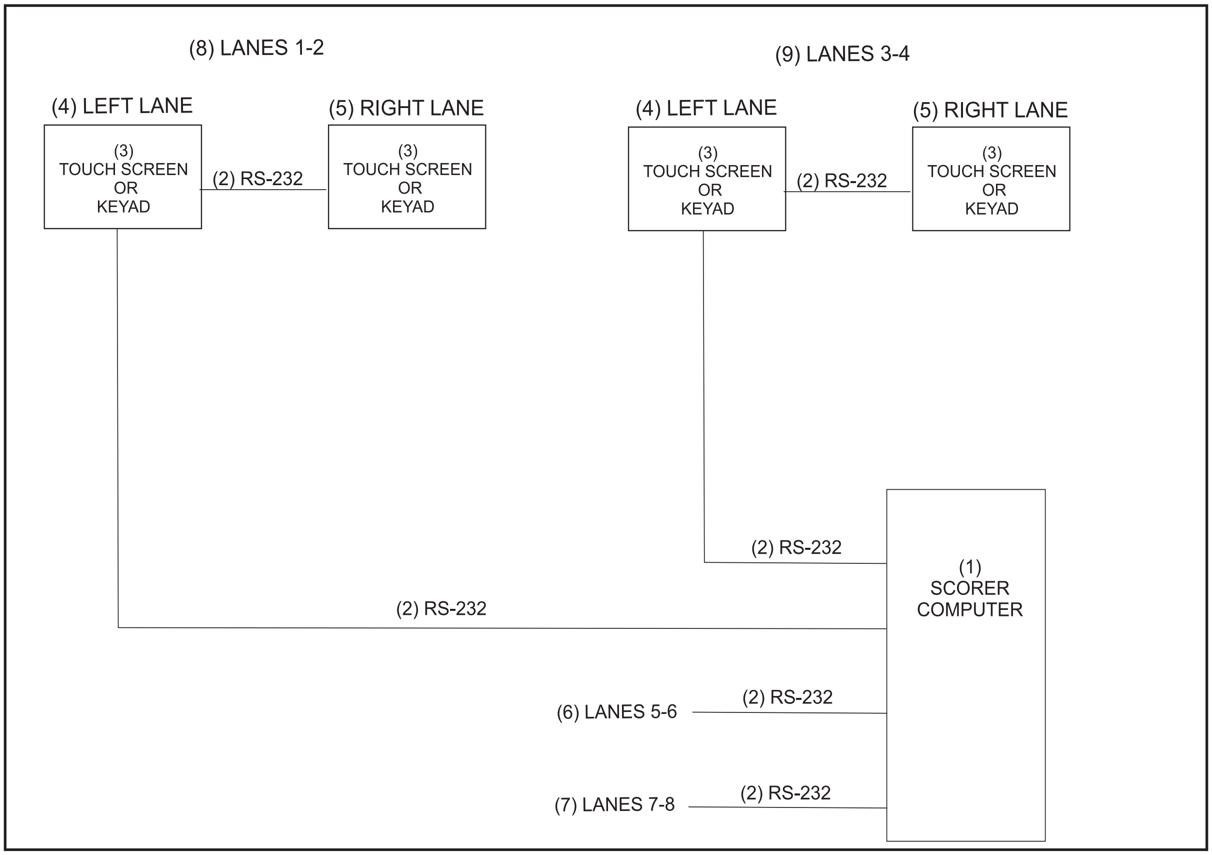
Circuit Description:

Communication to the consoles keypads or touchscreens is controlled by RS-232 interface ports on the main Video3 PCB. The communication routed to the in Primary Patch Panel from the Video3 PCB through a small ribbon cable. Each 9-pin connector on the Primary Patch Panel provide two RS-232 communication ports - one for each lane of a lane pair.

***NOTE**: Also included as part of the 9-pin connector signals are exciter audio and power for the Keypad Interface PCBs.*

The cable from the Scorer Computer routes to the odd lane console then continues to the even lane console.

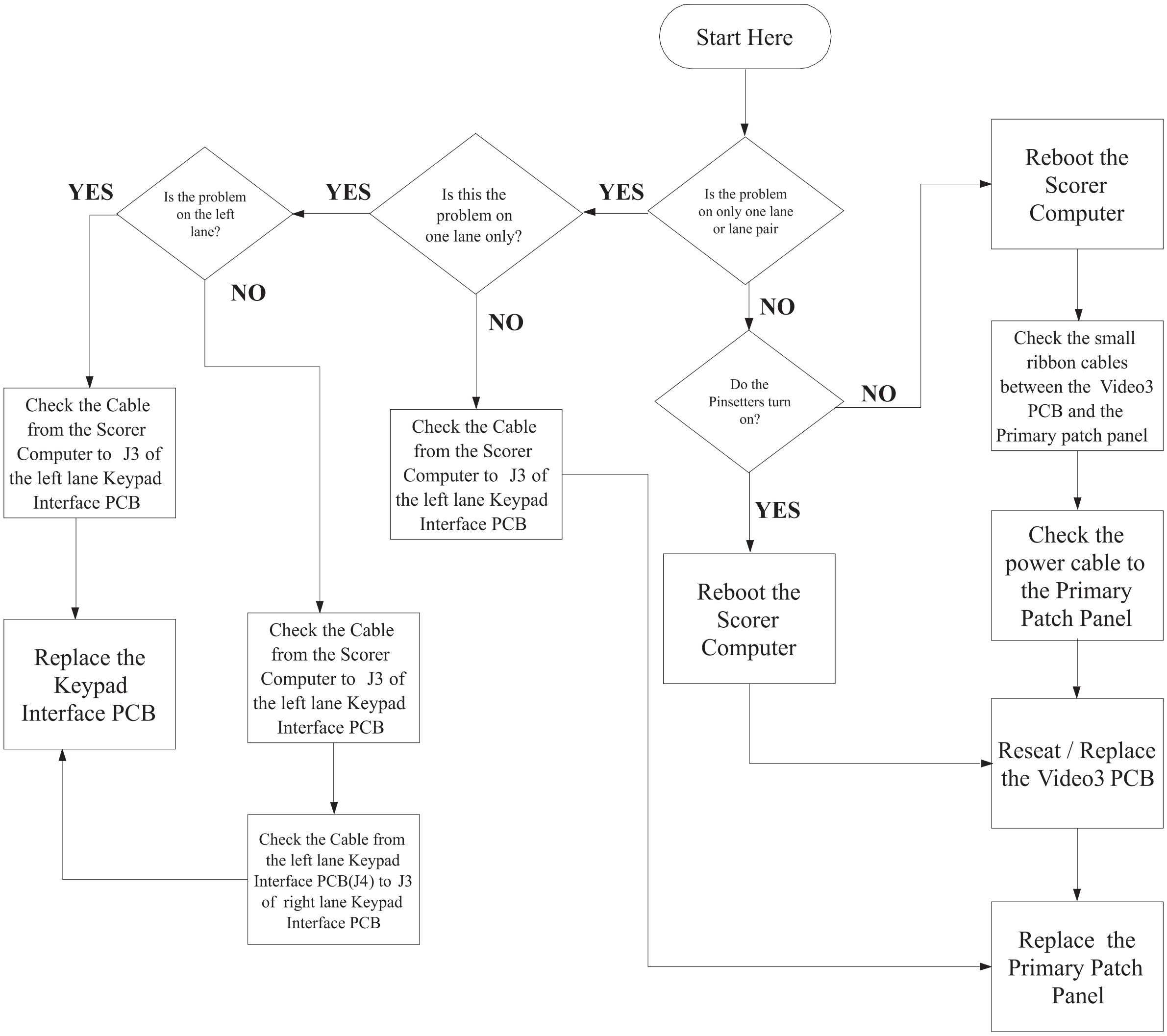
Inside the console, the Keypad Interface PCB or the LCD Controller PCB communicate the bowler's input via the RS-232 interface. Refer to figure titled *Communication Cabling.*


(8) LANES 1-2
(9) LANES 3-4
(4) LEFT LANE
(5) RIGHT LANE
(4) LEFT LANE
(5) RIGHT LANE
(3) TOUCH SCREEN OR KEYAD
(2) RS-232
(3) TOUCH SCREEN OR KEYAD
(3) TOUCH SCREEN OR KEYAD
(2) RS-232
(3) TOUCH SCREEN OR KEYAD
(2) RS-232
(1) SCORER COMPUTER
(2) RS-232
(6) LANES 5-6
(2) RS-232
(7) LANES 7-8
(2) RS-232

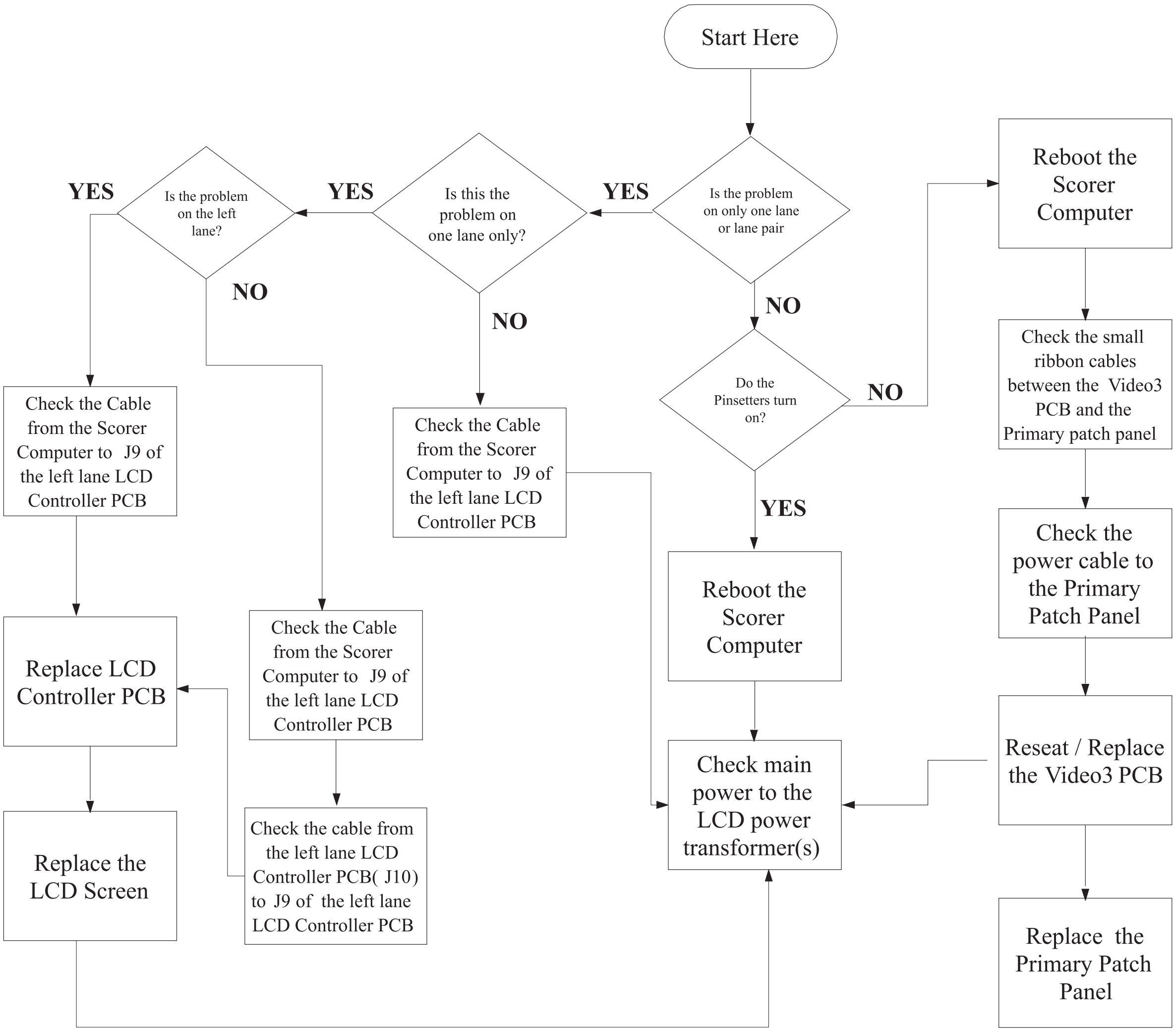
Communication Cabling

(1) SCORER COMPUTER
(2) RS-232
(3) TOUCHSCREEN OR KEYPAD
(4) LEFT LANE
(5) RIGHT LANE
(6) LANES 5-6
(7) LANES 7-8
(8) LANES 1-2
(9) LANES 3-4

No Keyboard Input


Start Here
Is the problem on only one lane or lane pair
YES
NO
Is this the problem on one lane only?
YES
NO
Is the problem on the left lane?
YES
NO
Check the Cable from the Scorer Computer to J3 of the left lane Keypad Interface PCB
Replace the Keypad Interface PCB
Check the Cable from the Scorer Computer to J3 of the left lane Keypad Interface PCB
Check the Cable from the left lane Keypad Interface PCB(J4) to J3 of right lane Keypad Interface PCB
Check the Cable from the Scorer Computer to J3 of the left lane Keypad Interface PCB
Do the Pinsetters turn on?
NO
YES
Reboot the Scorer Computer
Reboot the Scorer Computer
Check the small ribbon cables between the Video3 PCB and the Primary patch panel
Check the power cable to the Primary Patch Panel
Reseat / Replace the Video3 PCB
Replace the Primary Patch Panel

No Touchscreen Input


Start Here
Is the problem on only one lane or lane pair
YES
Is this the problem on one lane only?
YES
Is the problem on the left lane?
YES
NO
NO
NO
Do the Pinsetters turn on?
NO
YES
Reboot the Scorer Computer
Check the small ribbon cables between the Video3 PCB and the Primary patch panel
Check the power cable to the Primary Patch Panel
Reseat / Replace the Video3 PCB
Replace the Primary Patch Panel
Check the Cable from the Scorer Computer to J9 of the left lane LCD Controller PCB
Check the Cable from the Scorer Computer to J9 of the left lane LCD Controller PCB
Check the Cable from the Scorer Computer to J9 of the left lane LCD Controller PCB
Replace LCD Controller PCB
Replace the LCD Screen
Check the cable from the left lane LCD Controller PCB(J10) to J9 of the left lane LCD Controller PCB
Reboot the Scorer Computer
Check main power to the LCD power transformer(s)

CONSOLE AUDIO PROBLEMS

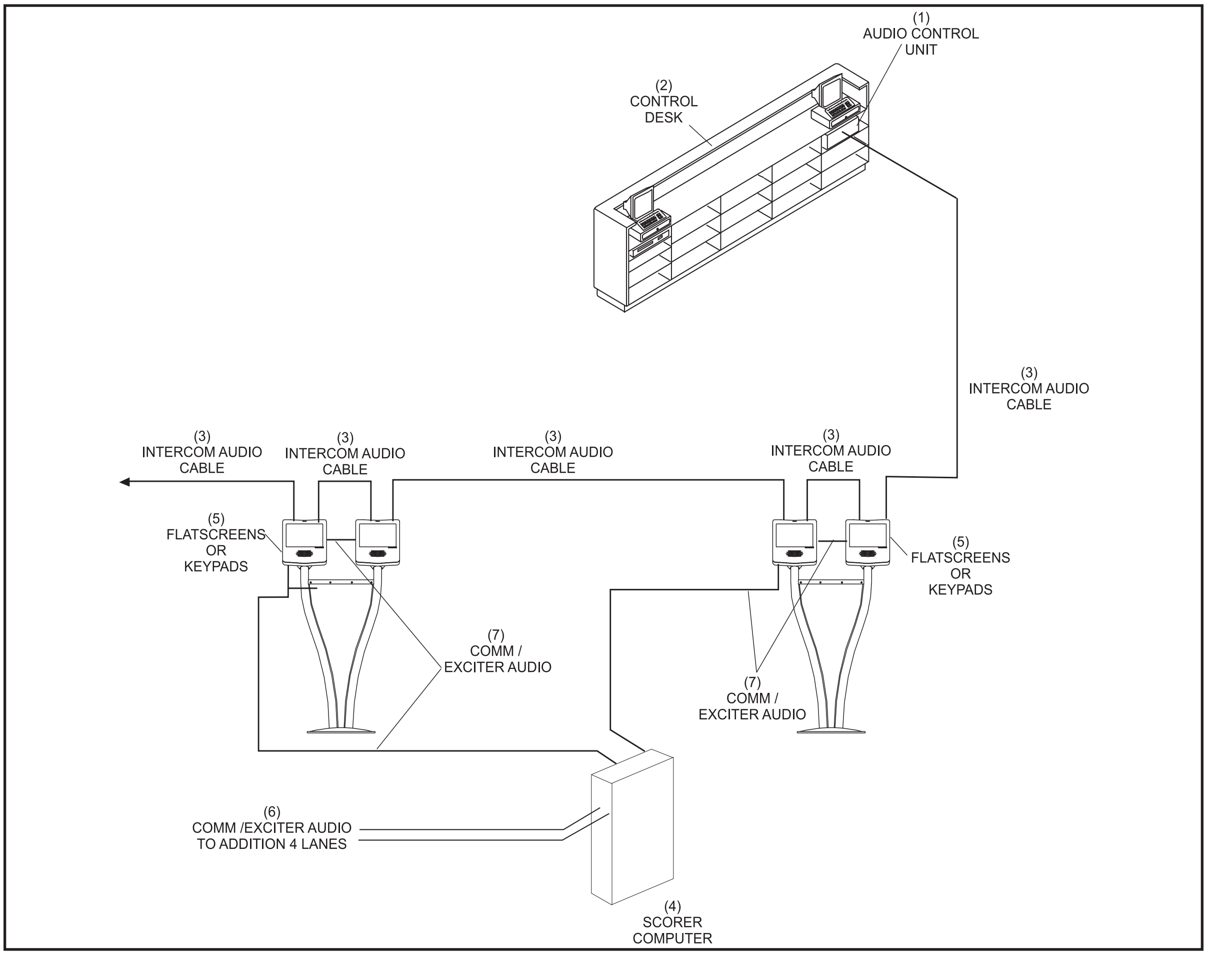
Circuit Description:

Three types of audio are used in the Vector System.

Sound Exciters originate at the Scorer Computer hard drive and are converted by the audio circuit on the Motherboard. It is then routed to the Keypad Interface PCB or Touchscreen Controller PCB inside the console from the 9-pin connectors of the Primary Patch Panel.

Intercom audio originates from the intercom handset box and is amplified by the Audio Control Box or (also referred to as the Audio/Video box) located at the control desk. It is sent from this box to the each Keypad Interface PCB or Touchscreen Controller PCB inside the consoles via the Global Audio Cable.

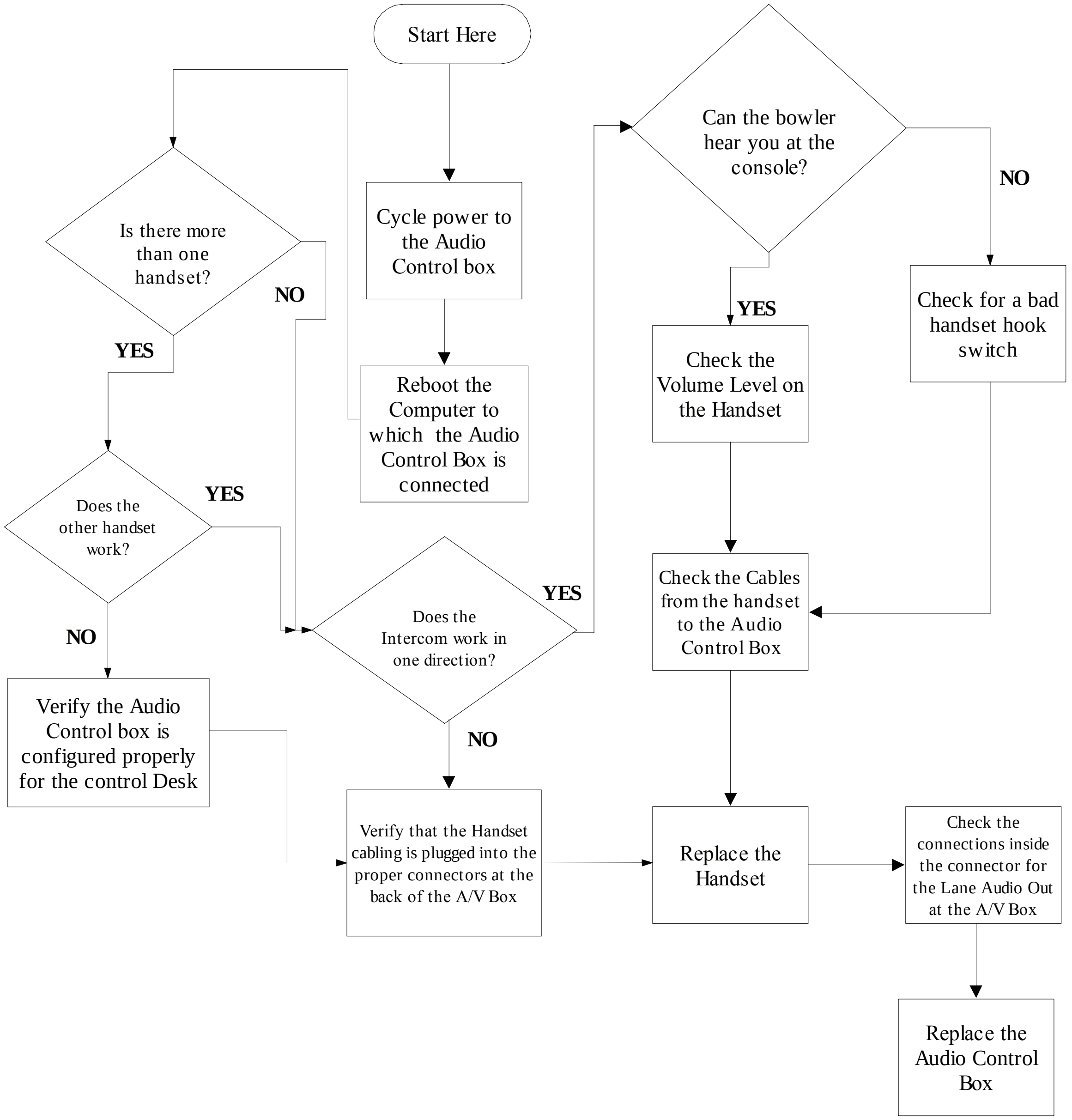
Once the audios are connected to the Keypad Interface PCB or Touchscreen Controller PCB, the desired audio can be selected by the Keypad Interface PCB or Touchscreen Controller PCB through RS-232 communication. Refer to figure titled *Audio Cabling.*


(1) AUDIO CONTROL UNIT
(2) CONTROL DESK
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(3) INTERCOM AUDIO CABLE
(5) FLATSCREENS OR KEYPADS
(5) FLATSCREENS OR KEYPADS
(7) COMM / EXCITER AUDIO
(7) COMM / EXCITER AUDIO
(6) COMM /EXCITER AUDIO TO ADDITION 4 LANES
(4) SCORER COMPUTER

Audio Cabling

(1) AUDIO/VIDEO UNIT
(2) CONTROL DESK
(3) GLOBAL AUDIO CABLE
(4) SCORER COMPUTER
(5) FLATSCREENS OR KEYPADS
(6) LLAN EXCITER AUDIO LANES 1-2
(7) LLAN/EXCITER AUDIO LANES 3-4
(8) GLOBAL AUDIO CABLE TO NEXT LANE PAIR

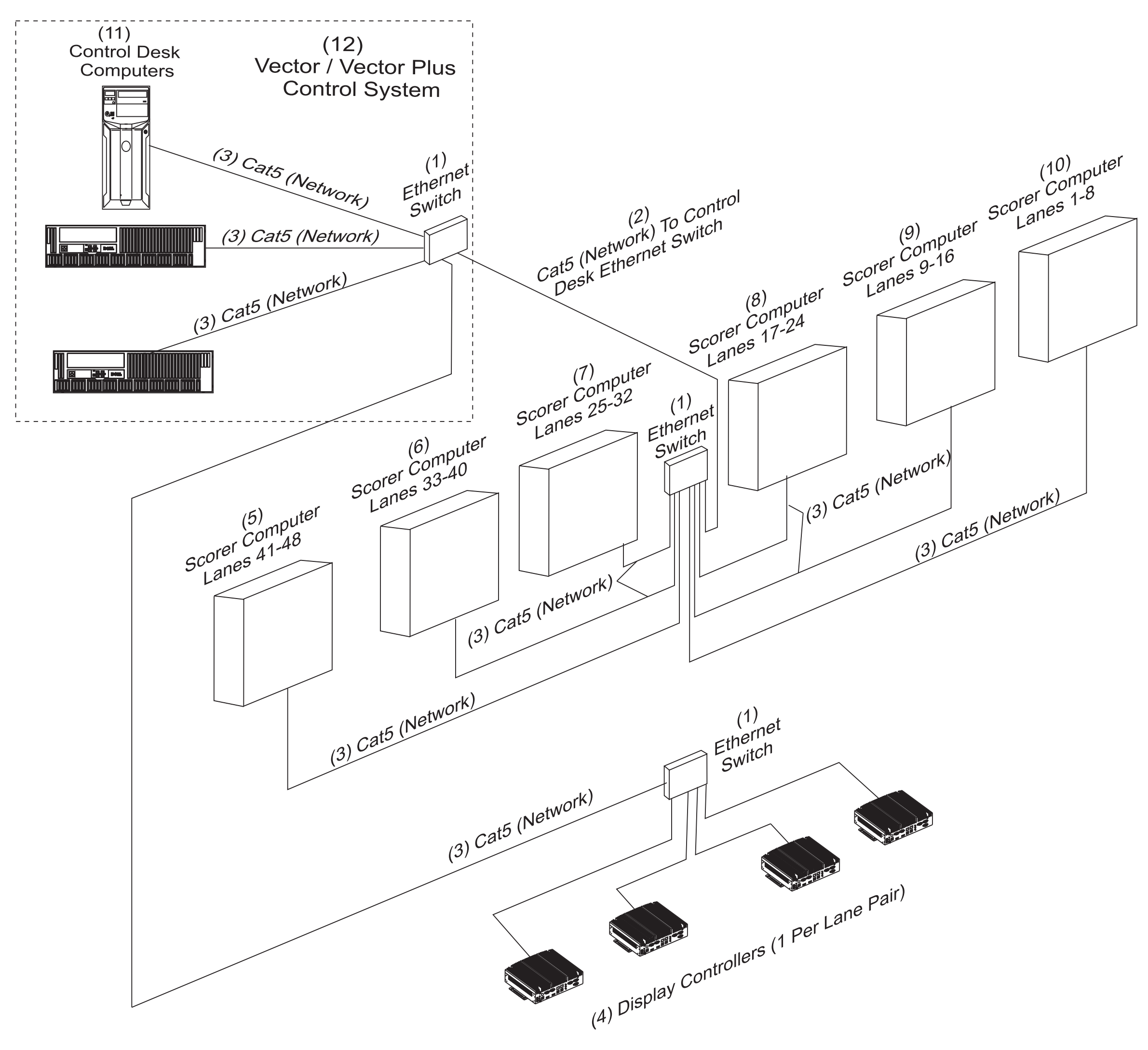
The Intercom Will Not Work On Any Lane


Start Here
Cycle power to the Audio Control box
Reboot the Computer to which the Audio Control Box is connected
Is there more than one handset?
NO
YES
Does the other handset work?
YES
NO
Verify the Audio Control box is configured properly for the control Desk
Does the Intercom work in one direction?
YES
NO
Verify that the Handset cabling is plugged into the proper connectors at the back of the A/V Box
Can the bowler hear you at the console?
YES
NO
Check the Volume Level on the Handset
Check for a bad handset hook switch
Check the Cables from the handset to the Audio Control Box
Replace the Handset
Check the connections inside the connector for the Lane Audio Out at the A/V Box
Replace the Audio Control Box

DESK COMMUNICATION ISSUES

Circuit Description:

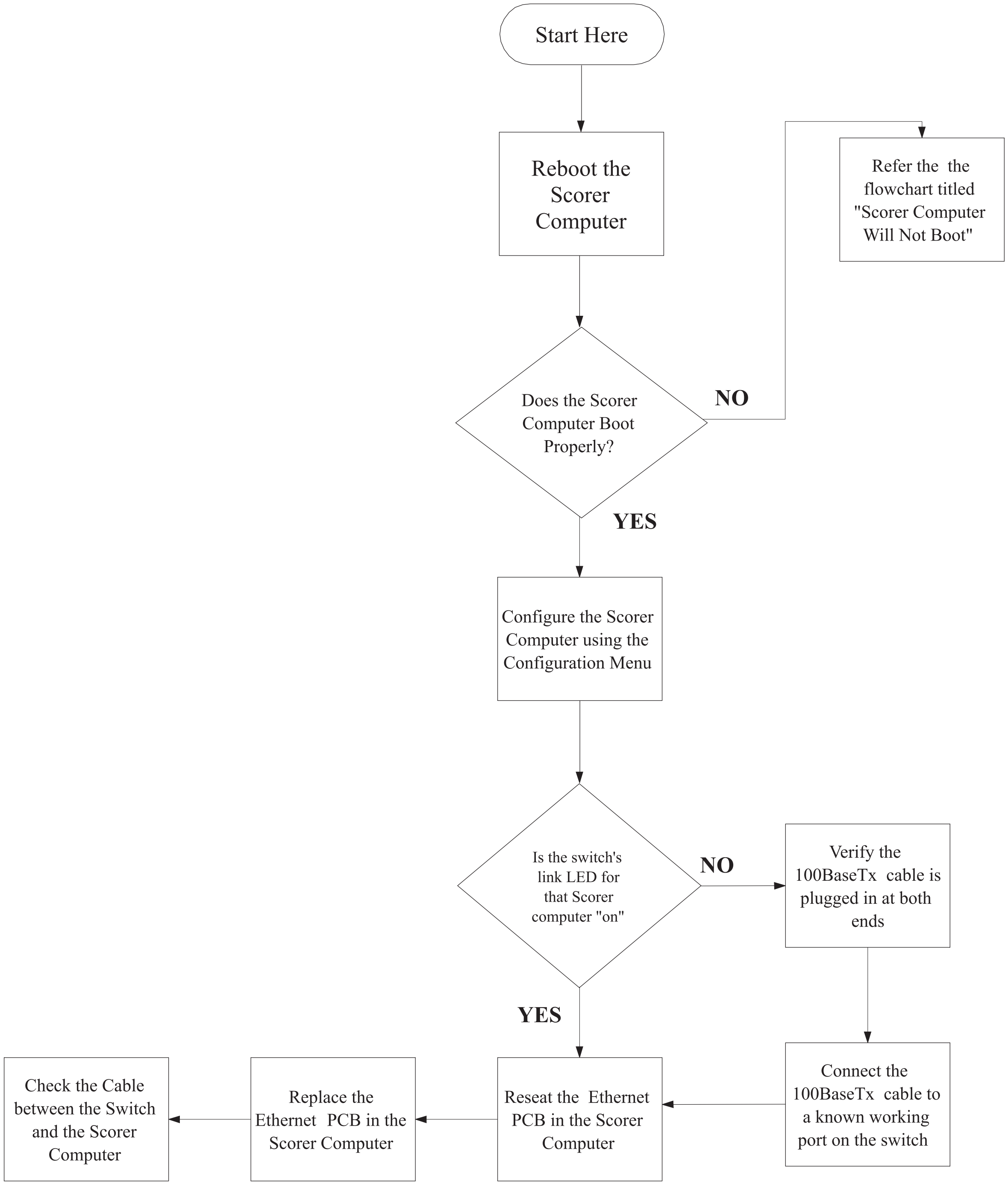
Communication from the Scorer Computer to the control desk and between computers in the Vector or Vector Plus control system is controlled through ethernet 100baseTX twisted pair cabling (sometimes referred to as CAT5 cable) and ethernet switches. Refer to the figure titled *Vector Ethernet Cabling.*


(11) Control Desk Computers
(12) Vector / Vector Plus Control System
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(2) Cat5 (Network) To Control Desk Ethernet Switch
(10) Scorer Computer Lanes 1-8
(9) Scorer Computer Lanes 9-16
(8) Scorer Computer Lanes 17-24
(7) Scorer Computer Lanes 25-32
(1) Ethernet Switch
(6) Scorer Computer Lanes 33-40
(5) Scorer Computer Lanes 41-48
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(3) Cat5 (Network)
(1) Ethernet Switch
(3) Cat5 (Network)
(4) Display Controllers (1 Per Lane Pair)

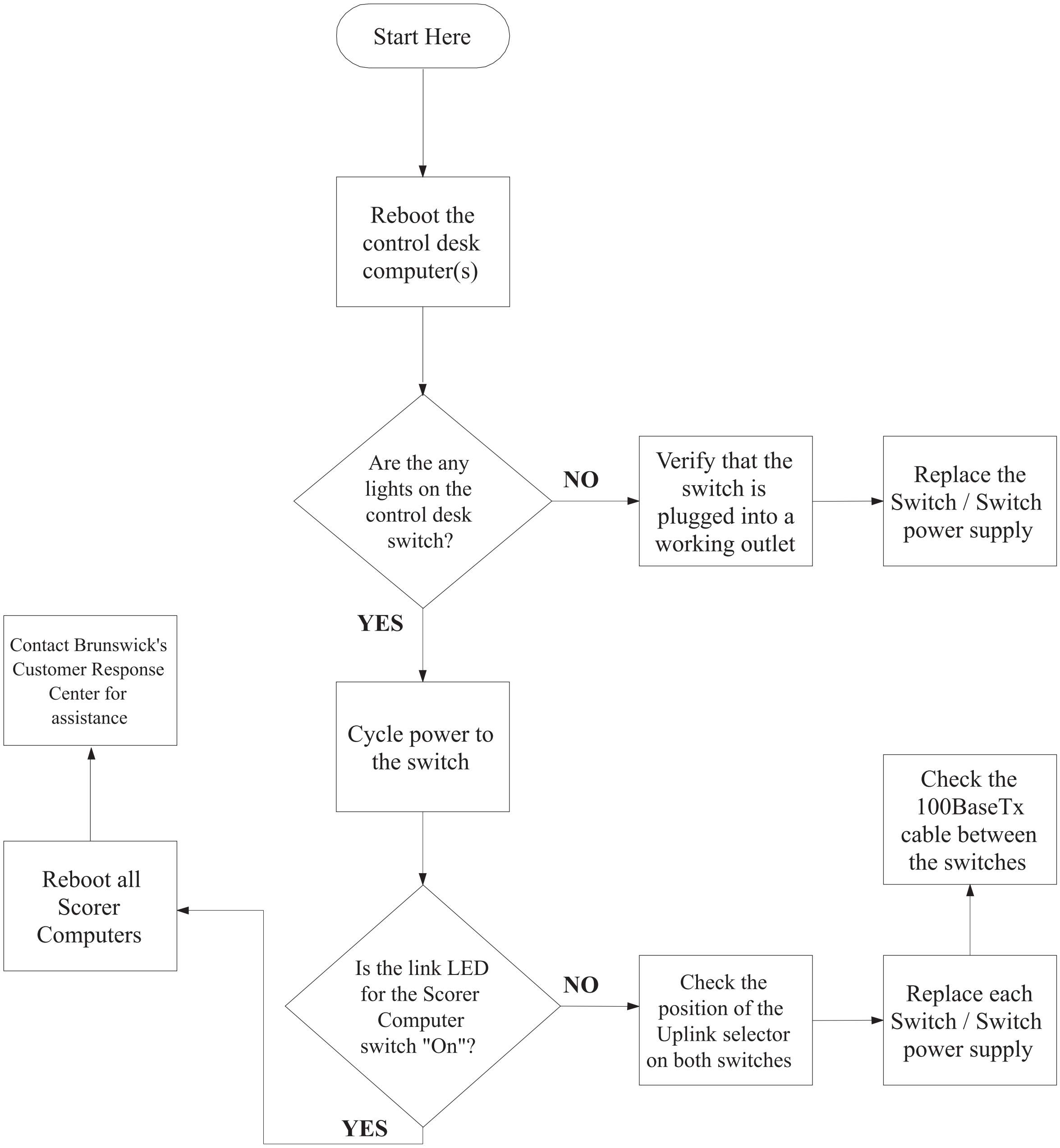
Vector Ethernet Cabling

(1) ETHERNET SWITCH
(2) CAT5 CABLE TO CONTROL DESK
(3) CAT5 (NETWORK)
(4) DISPLAY CONTROLLERS (ONE PER LANE PAIR)
(5) SCORER COMPUTER LANES 41-48
(6) SCORER COMPUTER LANES 33-40
(7) SCORER COMPUTER LANES 25-32
(8) SCORER COMPUTER LANES 17-24
(9) SCORER COMPUTER LANES 9-16
(10) SCORER COMPUTER LANES 1-8
(11)CONTROL DESK COMPUTERS
(12) VECTOR / VECTOR PLUS CONTROL SYSTEM

Cannot Communicate to One Scorer Computer


Start Here
Reboot the Scorer Computer
Refer the the flowchart titled "Scorer Computer Will Not Boot"
Does the Scorer Computer Boot Properly?
NO
YES
Configure the Scorer Computer using the Configuration Menu
Is the switch's link LED for that Scorer computer "on"
NO
Verify the 100BaseTx cable is plugged in at both ends
YES
Check the Cable between the Switch and the Scorer Computer
Replace the Ethernet PCB in the Scorer Computer
Reseat the Ethernet PCB in the Scorer Computer
Connect the 100BaseTx cable to a known working port on the switch

No Communication to Any Scorer Computer



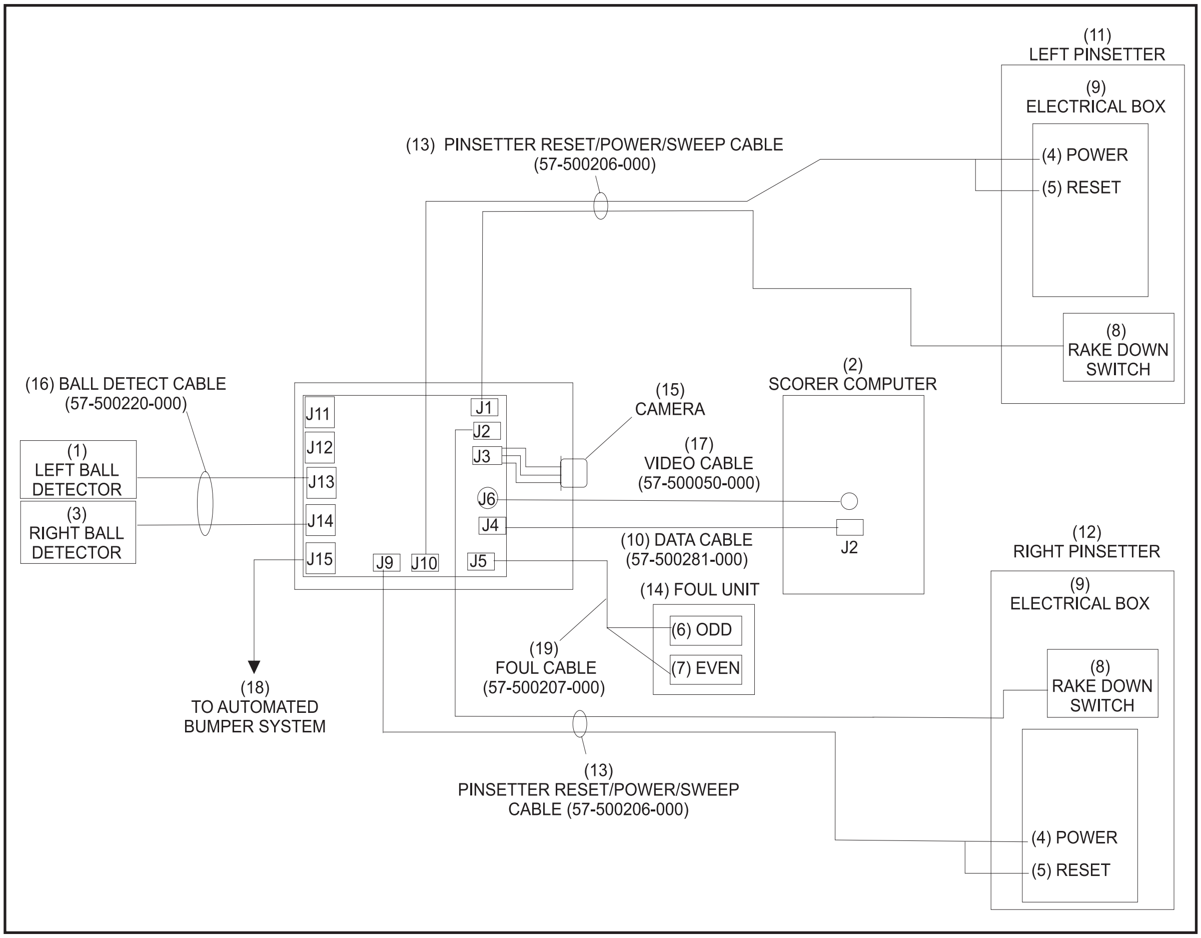
Start Here
Reboot the control desk computer(s)
Are the any lights on the control desk switch?
NO
Verify that the switch is plugged into a working outlet
Replace the Switch / Switch power supply
YES
Cycle power to the switch
Is the link LED for the Scorer Computer switch "On"?
NO
Check the position of the Uplink selector on both switches
Replace each Switch / Switch power supply
Check the 100BaseTx cable between the switches
YES
Reboot all Scorer Computers
Contact Brunswick's Customer Response Center for assistance

PINSETTER PROBLEMS

Circuit Description:

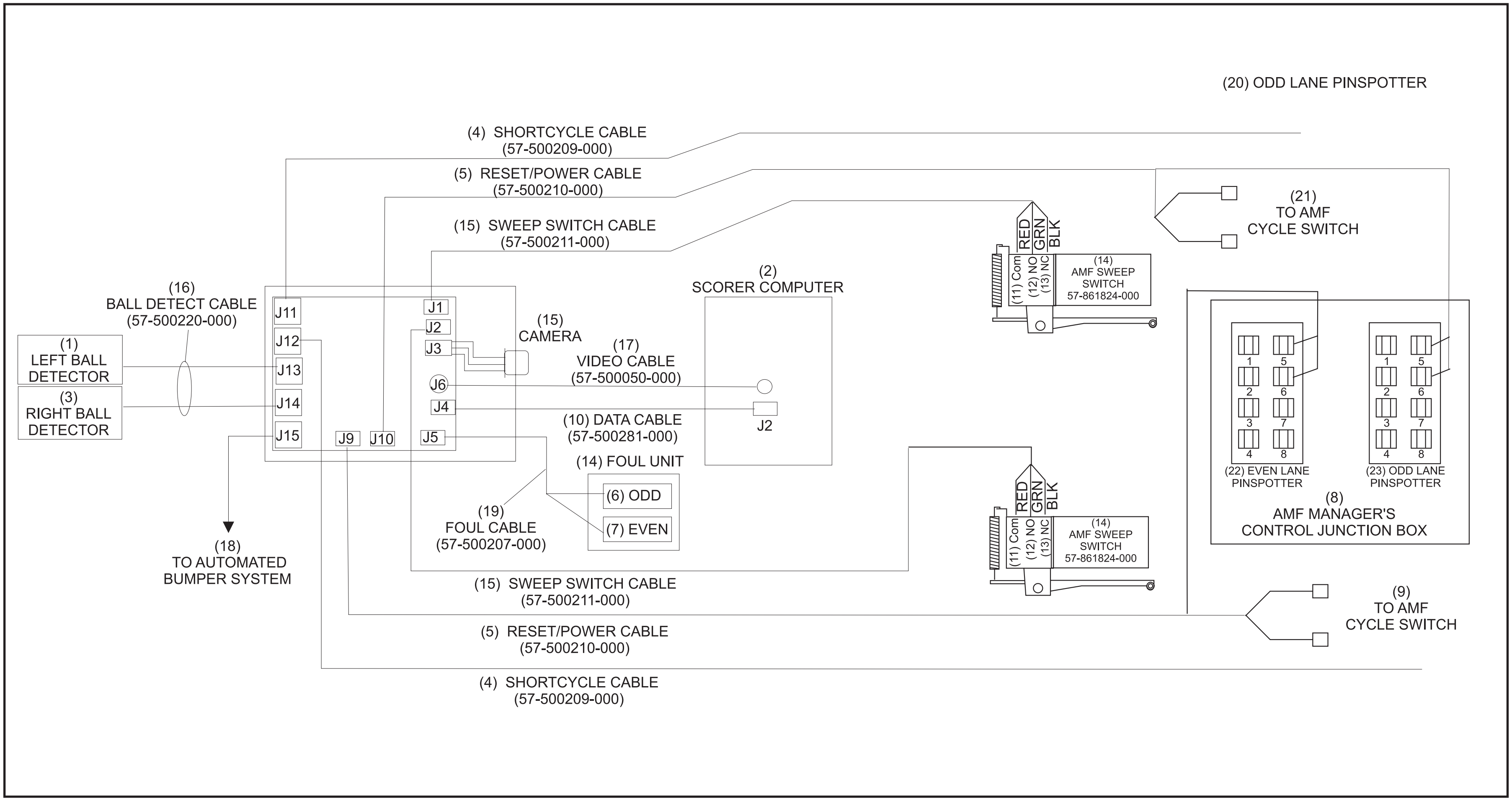
The Vector Scoring System provide basic On/Off and Reset signals for all non-GS pinsetters. For A-2 installations with Distributions PCB software versions prior to 1.03, the time delay module was disabled so that the Vector system could provide pinsetter triggering and cycling. A bypass switch was installed so that a mechanic could easily reconnect the module in the event of a scoring system failure. Refer to figure titled *Camera Wiring A-2 Pinsetters with Software V1.02 and Prior.* For installations with Distribution PCB software version 1.03 or later, the pinsetter cycles normally. The Vector system only provides auto trigger capabilities as a “back-up” in the event the pinsetter does not trigger on its own. Refer to figure titled *Camera Wiring A-2 Pinsetters with Software V1.03 and Later.*

For select AMF Pinspotters , the scoring system can provide the necessary signals for short cycle capabilities. Refer to figure titled *Camera Wiring AMF 8270SS Pinspotters.*


(11) LEFT PINSETTER
(9) ELECTRICAL BOX
(4) POWER
(5) RESET
(13) PINSETTER RESET/POWER/SWEEP CABLE (57-500206-000)
(8) RAKE DOWN SWITCH
(2) SCORER COMPUTER
(16) BALL DETECT CABLE (57-500220-000)
(15) CAMERA
(1) LEFT BALL DETECTOR
(3) RIGHT BALL DETECTOR
J11
J12
J13
J14
J15
J9
J10
J1
J2
J3
J6
J4
J5
(17) VIDEO CABLE (57-500050-000)
(10) DATA CABLE (57-500281-000)
J2
(12) RIGHT PINSETTER
(9) ELECTRICAL BOX
(14) FOUL UNIT
(6) ODD
(7) EVEN
(19) FOUL CABLE (57-500207-000)
(8) RAKE DOWN SWITCH
(18) TO AUTOMATED BUMPER SYSTEM
(13) PINSETTER RESET/POWER/SWEEP CABLE (57-500206-000)
(4) POWER
(5) RESET

Camera Wiring A-2 Pinsetters with Software V1.03 and Later

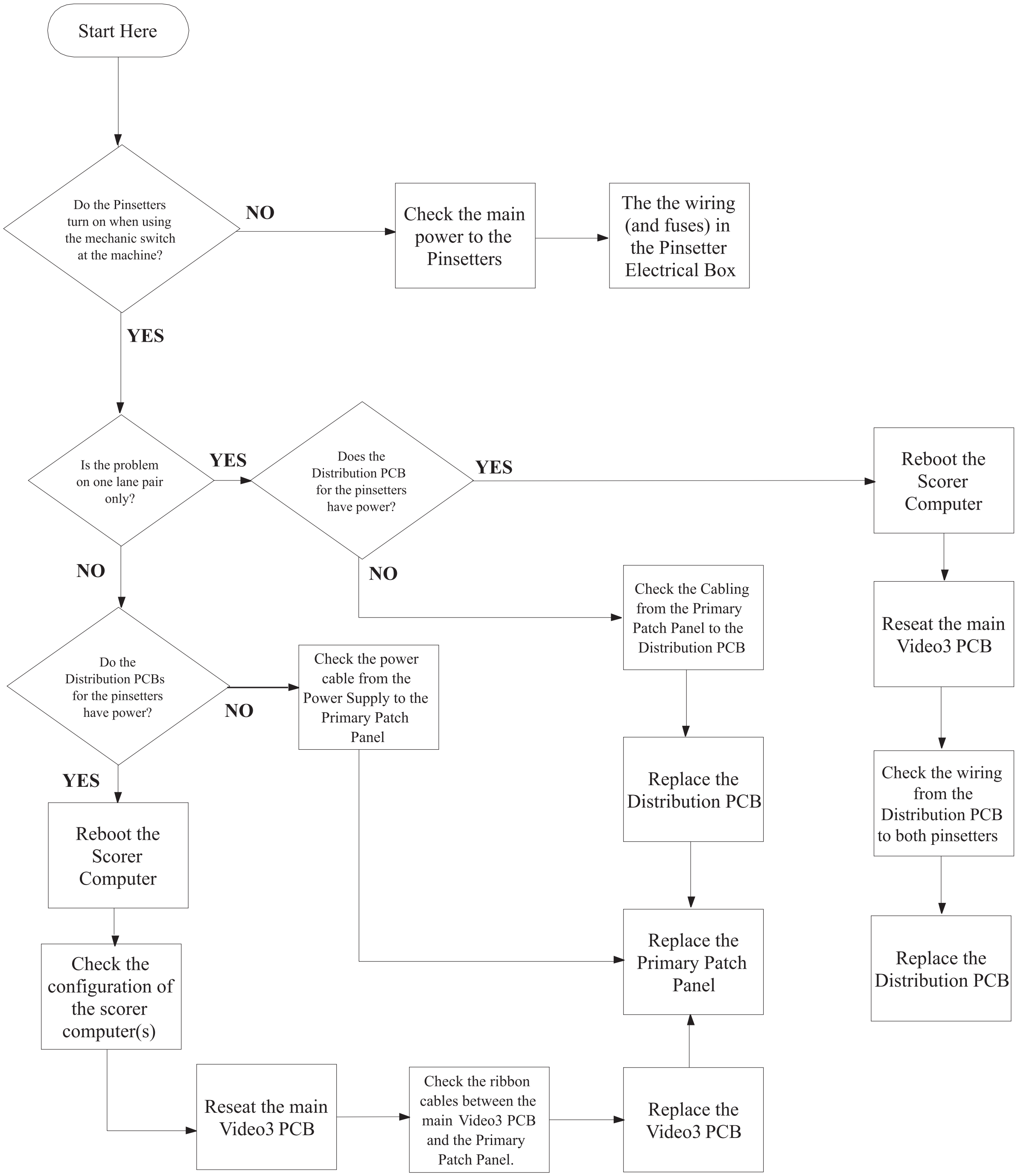
(1) LEFT BALL DETECTOR
(2) SCORER COMPUTER
(3) RIGHT BALL DETECTOR
(4) POWER
(5) RESET
(6) ODD
(7) EVEN
(8) RAKE DOWN SWITCH
(9) A-2 ELECTRICAL BOX
(10) DATA CABLE (57-500281-000)
(11) LEFT PINSETTER
(12) RIGHT PINSETTER
(13) PINSETTER RESET/POWER/SWEEP CABLE (57-500206-000)
(14) FOUL UNIT
(15) CAMERA
(16) BALL DETECT CABLE (57-500220-000)
(17) VIDEO CABLE (57-500050-000)
(18) TO AUTOMATED BUMPER SYSTEM
(19) FOUL CABLE (57-500207-000)


(20) ODD LANE PINSPOTTER
(4) SHORTCYCLE CABLE (57-500209-000)
(5) RESET/POWER CABLE (57-500210-000)
(15) SWEEP SWITCH CABLE (57-500211-000)
(21) TO AMF CYCLE SWITCH
RED
GRN
BLK
(11) Com
(12) NO
(13) NC
(14) AMF SWEEP SWITCH 57-861824-000
(16) BALL DETECT CABLE (57-500220-000)
(1) LEFT BALL DETECTOR
(3) RIGHT BALL DETECTOR
J11
J12
J13
J14
J15
J9
J10
J1
J2
J3
J6
J4
J5
(15) CAMERA
(17) VIDEO CABLE (57-500050-000)
(2) SCORER COMPUTER
J2
(10) DATA CABLE (57-500281-000)
(14) FOUL UNIT
(6) ODD
(7) EVEN
(19) FOUL CABLE (57-500207-000)
(18) TO AUTOMATED BUMPER SYSTEM
1
2
3
4
5
6
7
8
(22) EVEN LANE PINSPOTTER
(23) ODD LANE PINSPOTTER
(8) AMF MANAGER'S CONTROL JUNCTION BOX
(9) TO AMF CYCLE SWITCH
(15) SWEEP SWITCH CABLE (57-500211-000)
(5) RESET/POWER CABLE (57-500210-000)
(4) SHORTCYCLE CABLE (57-500209-000)

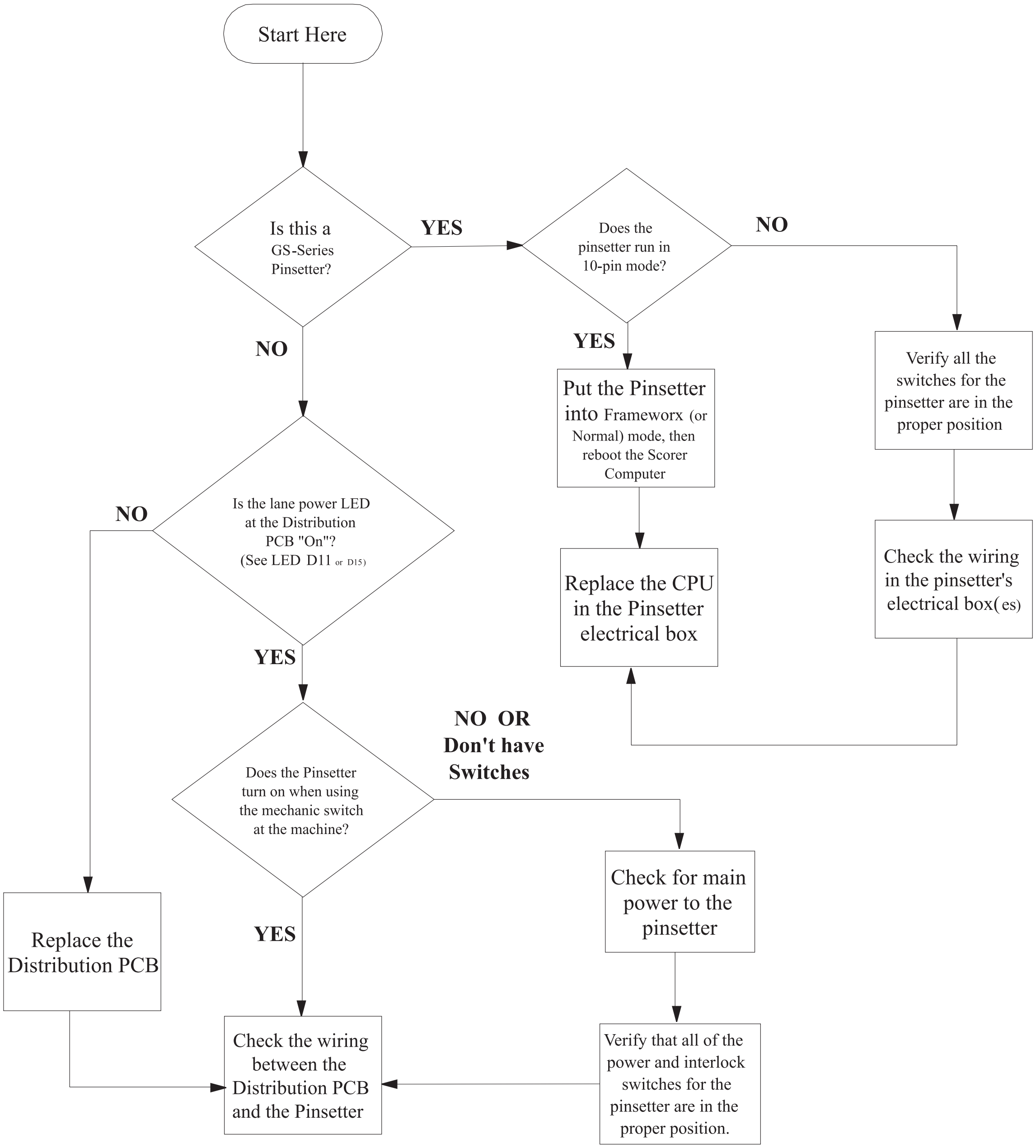
Camera Wiring AMF 8270SS Pinspotters.

(1) LEFT BALL DETECTOR
(2) SCORER COMPUTER
(3) RIGHT BALL DETECTOR
(4) SHORT CYCLE CABLE 57-500209-000
(5) RESET/POWER CABLE 57-500210-000
(6) ODD
(7) EVEN
(8) AMF MANAGER'S CONTROL JUNCTION BOX
(9) TO AMF CYCLE SWITCH
(10) DATA CABLE (57-500281-000)
(11) COM
(12) NO
(13) NO CONNECTION
(14) AMF SWITCH 57-861824-000
(15) CAMERA
(16) BALL DETECT CABLE (57-500220-000)
(17) VIDEO CABLE (57-500050-000)
(18) TO AUTOMATED BUMPER SYSTEM
(19) FOUL CABLE (57-500207-000)
(20) TO ODD LANE PINSPOTTER
(21) TO AMF CYCLE SWITCH
(22) EVEN LANE PINSPOTTER
(23) ODD LANE PINSPOTTER

The Pinsetter for Multilple Lanes Will Not Turn On (Non GS Pinsetter)


Start Here
Do the Pinsetters turn on when using the mechanic switch at the machine?
NO
Check the main power to the Pinsetters
The the wiring (and fuses) in the Pinsetter Electrical Box
YES
Is the problem on one lane pair only?
YES
Does the Distribution PCB for the pinsetters have power?
YES
Reboot the Scorer Computer
Reseat the main Video3 PCB
Check the wiring from the Distribution PCB to both pinsetters
Replace the Distribution PCB
NO
Check the Cabling from the Primary Patch Panel to the Distribution PCB
Replace the Distribution PCB
NO
Do the Distribution PCBs for the pinsetters have power?
NO
Check the power cable from the Power Supply to the Primary Patch Panel
Replace the Primary Patch Panel
YES
Reboot the Scorer Computer
Check the configuration of the scorer computer(s)
Reseat the main Video3 PCB
Check the ribbon cables between the main Video3 PCB and the Primary Patch Panel.
Replace the Video3 PCB

The Pinsetter for OneLane Will Not Turn On


Start Here
Is this a GS-Series Pinsetter?
YES
NO
Does the pinsetter run in 10-pin mode?
NO
YES
Put the Pinsetter into Frameworx (or Normal) mode, then reboot the Scorer Computer
Replace the CPU in the Pinsetter electrical box
Verify all the switches for the pinsetter are in the proper position
Check the wiring in the pinsetter's electrical box(es)
Is the lane power LED at the Distribution PCB "On"? (See LED D11 or D15)
NO
YES
Replace the Distribution PCB
Does the Pinsetter turn on when using the mechanic switch at the machine?
NO OR Don't have Switches
YES
Check for main power to the pinsetter
Verify that all of the power and interlock switches for the pinsetter are in the proper position.
Check the wiring between the Distribution PCB and the Pinsetter